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NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

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Chemical Export Trade Prospects

THERE are signs that at last chemical trade is turning the corner. For a considerable period past manufacturers and merchants have been exposed to serious anxiety on account of the industrial dislocation and the consequent restriction of industry. But on every side inquiries show a quiet return of confidence, and in the Board of Trade returns, published in our issue of last week, there is at last positive evidence that sentiment and statistics are moving in the same direction.

The returns for April, both as regards imports and as regards exports of chemicals, drugs, dyes and colours, show an appreciable increase, and it is notable that the increase in exports exceeds the increase in the imports. The fact that we are importing more than in recent times is not in itself an alarming feature; in this case it is rather evidence of a general expansion. The most positively satisfying evidence, however, is found in the substantial increase of £137,336 in the value of the exports. There are in the whole list of exports still a number of substances which show a decline. There is, for example, sulphuric acid, which is often spoken of as an index to chemical trade generally, and which shows a decline from £7,632 to £2,326. Ammonium sulphate, again, is down from £198,909 to £146,935, the principal loss being in the Dutch East Indies, and the British West India Islands. In the face of these considerable decreases in important chemical materials, it is the more notable that the total value of the exports should show such a substantial increase. The most remarkable advance is to be found in coal tar products, which have gone up as compared with April of last year from £110,767 to £328,500. Potassium compounds and sodium compounds have both substantially increased, and the total increase in chemical manufactures and products, other than drugs and dyestuffs, has been from £1,111,940 to £1,245,308. Drugs and medicines show a slight decline, but, as against this, dyes and dyestuffs mark a welcome advance of over £5,000, and paints, painters' colours and materials, always a strong feature of our exports, not only maintain their usual high position but show an increase of nearly £10,000. There is no reason to suppose that the figures for April are in any way exceptional, and all branches of the industry will be encouraged to hope that they mark the beginning of an upward movement that will be consistently maintained.

There is one field of chemical trade which continues to disclose a steady decline and in which at present there are no signs of an immediate change; that is the branch dealing with re-exports. The figures for April are down from £95,949 to £89,963. This section may be taken as representing to a large extent the activities of the trader and merchant, and it is difficult to resist the conviction that with the development of large scale production and the consequent organisation of direct selling agencies, the field for the private trader is certainly not expanding. Moreover, the tendency to impose further restrictions and regulations on the import and handling of foreign materials points in the same direction. There must, however, always remain a genuine function and province for the merchant trader, whose business it is to explore the world's markets for new custom, and who in the past has done a great work in developing international trade and employing British shipping. During the past year the firms engaged in this important work have necessarily passed an anxious time, but with a better trade outlook it is to be hoped that they will share in the general improvement that now seems in prospect.

On the manufacturing side, the tendency continues to be in favour of large scale consolidation, and judging by the attitude of the ordinary investor public opinion has increasing confidence in this policy. Within a comparatively short time the shares of Imperial Chemical Industries, both ordinary and preferred, have risen to a considerable extent, and even the deferred shares are now being freely bought on the prospect of early appreciation. The latest proposed addition

to the great chemical concern is the Cassel Cyanide Co., which has received an offer from Imperial Chemical Industries to exchange shares in the way that other companies have done, and which will become part of the I.C.I. organisation if 75 per cent. of the shareholders accept the offer. For two existing Cassel shares of 5s. each there will be exchanged one ordinary share in I.C.I. and for five existing Cassel shares of 5s. each there will be exchanged one I.C.I. deferred share of 10s. The value attached to the deferred shares of I.C.I. indicates the prospective value which both sides put upon them and will no doubt be noted as a hint of future prospects.

From all branches of chemical industry, as well as chemical engineering, we hear that inquiries are good, and with a continuance of stable conditions there is justification for expecting these inquiries to materialise into trade. The position of the Government in relation to Arcos, Ltd., may cause a little momentary disturbance, but gives no ground for serious anxiety, and it may be that genuine trade between this country and Russia will be benefited, rather than injured, by its dissociation with formal Government agreements.

Polish Chemical Industry

THOUGH the report on the industrial, commercial, and financial situation in Poland in 1926, prepared by Mr. R. E. Kimens, British Commercial Secretary at Warsaw (H.M. Stationery Office, pp. 44, 1s. 6d.), does not represent Poland as an immense field for chemical expansion, it shows it to be a considerable market for inorganic and organic chemical materials and products, colours, dyestuffs, and varnishes, various other chemical products, and metals and metal products. The extent of the native operations are indicated by the fact that Poland has 153 chemical works, employing 22,370 workmen, and 599 metal, metallurgical, and affiliated industries, employing 76,531 workmen. The returns for January-December, 1926 (stated in thousands of gold zloty), were :—Inorganic chemical materials—imports 22,293, exports, 11,049; organic chemical materials and products—imports 59,827, exports 8,205; colours, dyestuffs, and varnishes—imports 7,859, exports 2,855; other chemical products—imports 6,257; exports 1,629. It will be noticed that the imports in all these cases largely exceed the exports. The general revival in the industrial situation during the year under review produced a favourable effect on the chemical industry, which had sustained heavy losses, and was in an unfavourable position at the beginning of the year. Although, owing to the introduction of home manufactures, the home demand is being supplied to an increasing extent by domestic production, there still exists, according to Mr. Kimens's review, a good market for the sale in Poland of heavy chemicals, animals and vegetable fats, artificial dyestuffs, varnishes, paints, and colours, pharmaceutical preparations, and patent medicines. In particular it is recommended as a market for acetic, boracic, citric, tannic, and tartaric acids, alum, antimony, chrome, cobalt, cream of tartar, infusorial earth, lead acetate, litharge, lithopone. naphthalene, potash bichromate, potassium chloride, potassium ferrocyanide, quicksilver, zinc oxide, and perfumery.

The Superphosphate Industry

IN recent years much has been heard of the difficult conditions of the calcium superphosphate industry, and there has been considerable speculation and some degree of anxiety as to its future. It is, as Dr. H. C. Brown points out in his foreword to a new work on "Artificial Fertilisers," by P. Parrish and A. Ogilvie (Ernest Benn, Ltd., 32s.), essentially a British industry. Unpretentious in its beginnings, it has grown and developed into a highly specialised industry involving a knowledge of chemistry, physics, and general engineering of a high order. Until now, curiously enough, there does not appear to have been any English treatise dealing in detail with the chemistry or unit processes involved in the manufacture of calcium superphosphate and compound fertilisers. That the situation has for some time been difficult is generally admitted. Two years ago the Fertiliser Manufacturers Association applied to the Board of Trade for the imposition of a protective duty on imported superphosphates, but failed to make out a case in its favour, though the chairman of the committee favoured a duty of 7s. 6d. per ton to run for two years. Considerable investigation has been undertaken by the industry itself in the hope of evolving a cheaper process for rendering the phosphate substance of phosphate rock water-soluble. Under present day conditions there can be no certainty that the processes of 50, 30, or even 10 years ago are equal to the present needs. In the opinion of the authors, admittedly two of our first authorities on the manufacturing and engineering sides, the greatest guarantee of the survival of any industry of a chemical nature is the existence of a really live research department, one section applied to the improvement of existing processes, the other to the examination of the possibility of new ideas and new methods.

Both Mr. Parrish and Mr. Ogilvie have contributed from time to time useful articles on different aspects of the industry, and some of the points they have emphasised in our columns are further developed in their new book. One of these points is the importance of mass production with a view to efficient and economical manufacture. The view of the authors still is that the artificial fertiliser works in this country are too small. In Great Britain the maximum output of the superphosphate industry was in 1913 approximately 807,000 tons, which represents an average of about 9,500 tons per annum per works. On the Continent there are several works with an annual output aggregating 100,000 tons and over. In the United States the Davison Chemical Co.'s plant at Baltimore, the largest superphosphate factory in the world, has a production capacity of half a million tons per annum. In Dutch superphosphate works manufacturing 100,000 tons annually and over, the output per man per year is approximately 275 tons. At English works the corresponding figure varies from 75 to 100 tons per man per year. In some of the larger American works the annual production per man is as high as 3,000 tons. The inference to be drawn from these figures is beyond doubt.

As to the future, the authors still hold the view that in spite of competition calcium superphosphate will be required for many years to come, as under certain

conditions certain soil requires nothing more than a phosphatic fertiliser capable of ready assimilation. But it is the compound fertiliser trade that has proved the most lucrative section of the calcium superphosphate industry, and the urgent importance of unremitting attention to this branch is very strongly emphasised. "While there is reason to believe," the authors state, "that the trend of events will be in the direction of closer working arrangements with other groups of producers of fertilisers, the superphosphate industry stands to benefit by taking time by the forelock, by developing or acquiring such processes as are calculated to ensure the perpetuation of its existing status, and by making known that the International Superphosphate Association in its collective capacity already possess admirable sales organisations, and that the special compound preparations of its various members have secured a reputation second to none in the countries in which they have been distributed. Continued attention must be given to research."

There are many readers of this valuable volume who, like Dr. H. C. Brown, may hesitate to accept all its conclusions, but no doubt at all can exist as to the immense value of the material collected together, the practical character of its treatment and suggestions, the intimate knowledge it displays of the mechanical and engineering problems, and its sincere search as regards the future for sound technique and efficient commercial organisation. The authors have rendered a distinct service to the industry, and the volume with which it is to be followed on other branches of the artificial fertiliser industry will be awaited with interest.

"Arcos"

THE Russian question divides itself into two parts and there are two sides to each part. There has been a tendency all through this business to mix up the political part and the trading part, which, as it seems to us, is almost wholly wrong. With the political part of the question we have nothing whatever to do. But so far as trade is concerned, the action of the Government in dismissing the Russians is, of course, a very serious matter. We shall hear protests very properly and rightly made by some of the British trading concerns now engaged in business transactions with Arcos, and with the Russian Trade Delegation. These people have, in the last few years, conducted a very considerable business, and its cessation or its dislocation for the moment will undoubtedly cause grave inconvenience to the British concerns that are handling this particular business. A surgical operation, even though it may result in great and permanent improvement, is always accompanied by a period of crisis and pain. If that be admitted, the action which the Government has taken should nevertheless lead to a big and welcome increase in the trade of this country with Russia.

The argument that trade is helped by trade agreements made by politicians has never appealed to us, and as the Prime Minister pointed out, the figures show the folly of this position. The United States of America, which, diplomatically and politically, will have nothing to do with Russia, which has no agreements and has never indulged in any form of recognition, is actually transacting more than half of the total trade of that great country. It will still be open to Arcos, Ltd., as a company registered in this country, to carry on its business subject to all the obligations and limitations which govern the dealings of the rest of us. When Arcos, however, is seen to be nothing but a trading company, when it is sure of its special status and diplomatic associations, it will be more obvious to those responsible for other trading companies that it is up to them to act as the Americans have done, and each in their several capacities to do their utmost to develop trading relations with the Russian Government or with merchants in neighbouring states or through any other of the numerous more normal trading channels that must now inevitably be opened up.

British Industries Fair

LARGER exhibition areas in both London and Birmingham are to be provided for next year's British Industries Fair, according to an answer given in the House of Commons on Monday by the Parliamentary Secretary to the Board of Trade (Sir Burton Chadwick). The Fairs, it was stated, will be held from February 20 to March 2. Forms of application for space in the respective sections will shortly be issued by the Department of Overseas Trade and the Birmingham Fair authorities, and preliminary arrangements have been made for publicity overseas. Already, it is understood, the Government have agreed to spend a sum of money not exceeding £25,000 for the purposes of publicity. In view of the great success of the last Fairs, a considerable increase in the number of exhibitors is expected by the Board of Trade. It is generally agreed that the Fairs held in February of this year were, from every point of view, the most representative and successful of the series; the amount of business actually done and the number of inquiries placed satisfied the expectations of nearly every exhibitor and ensured the continuance of these annual efforts to extend overseas trade. No official announcement has yet been made, but it may be taken for granted that chemical industry will again be represented at the London Fair of 1928, and that the arrangements will be in the same competent hands.

Books Received

COAL CARBONISATION—HIGH AND LOW TEMPERATURE. By John Roberts. London: Sir Isaac Pitman and Sons, Ltd. Pp. 400. 25s.

ORGANIC CHEMISTRY. By Frank E. Rice. London: McGraw-Hill Publishing Co., Ltd. Pp. 303. 12s. 6d.

INORGANIC CHEMICAL SYNONYMS AND OTHER USEFUL DATA. By Elton R. Darling. New York: D. Van Nostrand Co. Pp. 120. $1.00.

THE ELEMENTS OF CHEMISTRY. By William Foster. New York: D. Van Nostrand Co. Pp. 576. $2.00.

ARTIFICIAL FERTILISERS. By P. Parrish, A. Ogilvie. London: Ernest Benn, Ltd. Pp. 356. 32s.

The Calendar

June		
2	Chemical Society: Ordinary Scientific Meeting. 8 p.m.	Burlington House, Piccadilly, London, W.1.
3	Physical Society: Dr. E. H. Rayner on the forthcoming Eclipse of the Sun. 5 p.m.	Imperial College of Science, South Kensington, London.

The International Economic Conference at Geneva

By a Casual Observer

We have received the following interesting notes on the International Economic Conference at Geneva, at which Sir Max Muspratt and other well-known chemical leaders were present.

ALTHOUGH a good deal has appeared in certain of the English papers concerning the work of the Conference at Geneva no attempt has, so far, been made to sense the atmosphere or estimate the results. From the point of view of any particular industry no startling results were to be expected and, indeed, the voluminous reports of the various industries were not discussed officially, although they were the subject of many private conversations and, no doubt, had an important bearing upon the final resolutions passed by the Conference. Hence the document which contained the British, German, French, and Italian Monographs on Chemical Industry came in for appreciation and criticism between the representatives of those nations who were concerned. In unexpected ways the British monograph led to most interesting discussions, and certainly did more good than its authors anticipated.

Going from the particular to the general, it seems safe to draw one or two conclusions. The first is that if these Conferences continue, no country of the importance of Great Britain will be able to remain outside them, but they are unwieldy affairs. The large number of nations represented; the necessity that, on formal occasions, at least one speaker from each nation shall harangue the assembly; the language difficulty—all these things make the proceedings very protracted. Behind the scenes there is always the long and sometimes difficult business of securing sufficient agreement among conflicting opinions to make it possible to go to a formal meeting of the committee and in a reasonable time obtain a report from the committee.

One wonders for how long it will be possible for the business men of the nations to devote three or four weeks to work of this kind. It rather looks as though, if these Conferences must go on, there will be developed a corps of commercial politicians whose business it will be to represent the various countries at such deliberations.

The British Delegation

The British delegation was a very strong one, with Sir Arthur Balfour acting as its chairman. It included Sir Max Muspratt, Mr. W. T. Layton, Sir Norman Hill, and Mr. Arthur Pugh. Sir Hubert Llewellyn Smith was present as a member of the Economic Committee of the League of Nations, and the Rt. Hon. Walter Runciman as a representative of the International Chamber of Commerce. There were also present a number of lesser lights as experts and secretaries, some of whom were there continuously and others for shorter periods. But heavy as was the committee work, it was almost paralleled by the grim duty of attending the innumerable luncheons and dinners which the various delegations gave each other. Notable among these was the dinner given by the British Delegation on Wednesday, May 18. Sir Max Muspratt and Sir Arthur Balfour received the guests, who numbered more than one hundred, and it was curious to see Mr. W. J. U. Woolcock attempting to handle an assembly which comprised representatives of most of the nations of the world, to say nothing of handling those responsible for the catering. However, it was a very enjoyable dinner, was much appreciated by the guests, and moved our American friends to great efforts a few nights later.

The Humorous Note

Opposite each guest was placed a card which had printed on it what was called the "Hymn of the Economic Conference," which ran as follows:—

"Hark! the exporting Nations sing
World Free Trade's the only thing!
Open doors and tariffs mild
Marx and Mammon reconciled!
Soviets, Balkans, do not frown,
Let us knock your tariffs down,
Else your trade (and ours as well)
Cannot help but go to Hell.
Hark! the exporting Nations sing
World Free Trade's the only thing."

The authorship of this amusing production is obscure, and equally hidden in mystery is the following reply:—

CONTRA PROJET FRANCAIS.

"Debout les Protectionnistes!
Ecartons ces Laytonnistes
La bataille est rude mais loyale
Nous la voulons très amicale
Mais Serruys avec moi veille
A nous le jus de la treille!
Alors vous serez tous vaincus
Et libre échange n'aura veçu."

This was found written on the back of the "Hymn of the Economic Conference" somewhat near where Sir Max Muspratt, M. Theunis, and M. Loucheur were sitting, and perhaps there is sufficient internal evidence in the production itself to warrant a guess being made as to its authorship.

The Conference is over. It has entailed an enormous effort on the part of a large body of men. What will come out of it remains to be seen, but at least the representatives not only of Great Britain, but of the British Empire, have most worthily maintained the prestige of the Empire.

I.C.I. and the Cassel Cyanide Co.

THE directors of the Cassel Cyanide Co. intimate that an offer has been received from Imperial Chemical Industries to exchange shares on the following basis: "For two existing Cassel shares of 5s. each there will be exchanged one £1 ordinary share of Imperial Chemical Industries. For five existing Cassel shares of 5s. each there will be exchanged one deferred share of 10s. in Imperial Chemical Industries." The shares in Imperial Chemical Industries will rank for dividend from January 1, 1927, and the Cassel Cyanide Co.'s shareholders will retain their rights in respect of the interim dividend declared on May 13. The directors of the Cassel Cyanide Co. have resolved to recommend their shareholders to accept the offer, full details of which will shortly be issued. The offer is conditional upon its acceptance by the holders of not less than 75 per cent. of the shares. Cassel Cyanide is an old-established and prosperous company, and has an issued capital of £352,500 in 5s. shares. In 1906 and 1915 shareholders received capital bonuses of 50 per cent. and 100 per cent. respectively, while the average distribution for the past decade was 29½ per cent. The interim dividend of 3d. per share was declared on May 13. The directors are Colonel Sir E. A. Brotherton (chairman), A. Moore, J. A. Spens, W. Neill (managing director), H. N. Beilby, T. Ewan, M.Sc., Ph.D., F.I.C., and J. L. Deuchar.

Annual General Meeting of the Faraday Society

THE annual meeting of the Faraday Society was held in the rooms of the Chemical Society, Burlington House, London, on Wednesday. Included in the agenda was the election of the council for the session 1927–8. Among the nominations made by the council was that of Professor C. H. Desch, F.R.S., as president. Following the general meeting an ordinary meeting was held, the following papers being down for reading and discussion: "The problem of the surface tension of mercury and the action of aqueous solutions on a mercury surface," by R. S. Burdon and M. L. Oliphant; "The electro-deposition of iron-nickel alloys. Part I," by S. Glasstone and T. E. Symes; "The decomposition of nitrous oxide in the silent electric discharge," by S. S. Joshi; "A recording hydrostatic balance of simple design," by F. G. Tryhorn and W. F. Wyatt; "Investigations on Gaseous Explosions—Part II. Ionisation in detonating and non-detonating mixtures of hydrogen and oxygen," by S. W. Saunders; "Part III. Ionisation in explosions of carbon monoxide and oxygen," by S. W. Saunders and K. Sato; and "Part IV. Ionisation in methane-oxygen and acetylene-oxygen explosions," by S. W. Saunders; "The action of iron as an impurity in the lead accumulator. Part I. Capacity loss due to self-discharge; Part II. Permanent capacity loss. Adsorption and desorption of the iron by the positive plate," by F. M. Lea and J. T. Crennell.

Improving Prospects of British Chemical Exports

Trade Opinions on the Outlook

As it is just about a year since the country at large was returning to work after a devastating general strike, which, succeeded by the prolonged coal strike, caused an almost incalculable financial loss to the nation, it is now an opportune moment for reviewing the position in the chemical industry, especially in regard to overseas trade. No less than any other branch of industry, the chemical one was seriously depressed by the strike and its attendant evils, orders were lost, contracts cancelled, and export trade restricted. There are now, however, welcome signs of a gradual recovery. Inquiries in trading and manufacturing circles show a noticeable increase in orders received from abroad by British firms. Below we give the results of some of the inquiries made.

A PERUSAL of the Annual Economic Reports on trade in various countries is of interest, showing as it does where there are openings for trade where foreign manufacturers have advantages, and where the British makers should make good deficiencies to meet the competition by supplying local needs. Following is a summary which gives an indication of the needs and market conditions in different parts of the world.

BELGIUM.—The main competitors in practically all classes of chemicals are Germany and France. In 1926 Great Britain took the first place in supplying coal tar to Belgium, to the extent of 13,000 tons, second place in supplying pitch, 29,000 tons, against 32,000 tons in 1925, and in refined salts Great Britain was also the second largest source of supply, 6,800 tons being imported. Belgium bought pharmaceutical chemicals to the value of 2·9 million francs.

CANADA.—New large industries have been created by the application of electricity to refining and other processes. The fixation of nitrogen and its subsidiary industries are now under commercial development, and fertilisers, cyanamide, paints, varnishes, and wood distillates are expanding. Canada will probably become increasingly self-contained and independent.

CANARY ISLANDS.—The United Kingdom, owing to a practical monopoly in ammonium sulphate, claims nearly one-third of the trade in fertilisers. At the moment Germans and Dutch are competing severely with the British materials.

CHINA.—This country is nearly out of the market at present, but until recently there was remarkable progress in chemical fertilisers, which were unknown north of Fukien until the summer of 1924. It is thought that artificial fertilisers will, owing to greater efficiency, displace the ancient Chinese methods of fertilising. Sulphate of ammonia is the biggest demand, as it is specially suitable for rice. With regard to dyestuffs, both in the aniline and indigo markets, the price war between the Germans and Americans has made it almost impossible to meet competition, prices in some cases being 15 per cent. below pre-war, due to cutting in an attempt to control the market at any cost.

DENMARK.—The demand for heavy chemicals was comparatively small in 1926, owing to a general falling-off in trade, and the prospects of any considerable improvement in 1927 are not bright. Fine chemicals are used for pharmaceutical preparations, which are not much affected by the general trade situation. Caustic soda and calcined alkali are supplied chiefly by Great Britain and Belgium, caustic soda and potash by Germany, and copper sulphate in about equal quantities by Britain and Germany. There is a lucrative trade in fertilisers, but this country gets little of the business, although it is a fact that Danes would prefer British fertilisers if the prices were more satisfactory. British superphosphate producers should recognise the importance of producing a fertiliser containing such a percentage of pure water soluble phosphoric acid as will meet the needs of Danish soils.

FRANCE.—Great decreases of imports from Great Britain have been observed in the figures relating to chemical products, and it would seem that Great Britain is being displaced by Germany.

GUATEMALA.—Medicines and pharmaceutical chemicals imported from Great Britain amount to only about 5 per cent. of the total, this low figure being due probably to inadequate representation of British firms.

HUNGARY.—Owing to over-production the home market is not very lively, but much raw material has to be imported for the manufacture of heavy chemicals. Dyestuffs are also imported.

NEW ZEALAND.—Increasing imports of German dyes into New Zealand are said to be due partly to a lower price and partly to superiority in quality, with distinctiveness of shade. In piece dyeing of woollens German dyes are said to give better penetration and a more level result. The decrease of trade held by the United Kingdom in basic slags and Thomson phosphates is stated to be due to the difficulty of securing supplies with a high phosphoric acid content.

POLAND.—The revival in industry generally has produced a favourable effect on chemical industry and, although there is now an increase of home manufactures, there is still a good market for heavy chemicals, animal and vegetable fats, artificial dyestuffs, varnishes, paints, colours, pharmaceutical preparations, and patent medicines. The value of imports of chemicals (in gold zloty) during 1926 is as follows: Inorganic chemicals and products, 22,293; organic chemicals and products, 59,827; colours, dyes and varnishes, 7,859; other products, 6,257; but no separate figures for Britain's share of the trade are available. There is a market for acetic, boracic, tannic, and tartaric acids, alum antimony, chrome, cobalt, cream of tartar, infusorial earth, lead acetate, litharge, lithopone, naphthalene, potassium bichromate, potassium chloride, potassium ferro-cyanide, mercury, zinc oxide, and perfumery materials.

ROUMANIA.—Britain has been successful in practically ousting Germany from the market for alkaloids. With regard to fine chemicals, there are international agreements and, prices being equal, German products are preferred.

UNITED STATES.—There is a slight demand, chiefly from the Pacific Coasts, for crude coal tar.

Heavy Chemicals

The Barter Trading Corporation stated that there had not been any marked increase in exports generally, although there were individual cases of increases. Germany was buying much more coal tar products from this country, but this was probably due to temporary under-production by German firms. Curtailed markets in the Far East are attributed to the civil war in China and the financial crisis in Japan. The demand for British heavy chemicals in the Dominions and South America is reported to be steady, and any increase in the past few months has been slight.

Following are extracts from the Barter Trading Corporation's market review for the year.

"Few, if any indeed, occupied in industrial trade in Great Britain will regret the closing of 1926 .... 1927 has opened in an atmosphere of increasing confidence and peace which has been absent for many years and which, if it continues, will again place British industry in the forefront of world trade for quality, price and efficient service. Further, successful effort to stabilise currencies in European countries is having a beneficial effect upon international trade. Although the past year has been marred by industrial strife, it has been marked by great progress, scientific and technical, in the utilisation of new discoveries, new synthetic methods of production at lower cost, new avenues of consumption and the elimination of waste; it is pleasing to observe that the greatest achievements have been made in the chemical industries, and with peace and concentrated effort on the manufacturing side great strides should be recorded in 1927. The prospect of cheaper coal has already stimulated business in iron, steel, engineering, and shipbuilding. This will reflect beneficially on other key industries, and the chemical trade should secure its fair share. Capacity for output in the chemical trade is still in excess of consumption, and this should check any abnormal advances in prices. Consumers will be well advised, whilst not going short, not to overbuy their raw and semi-manufactured requirements.

Industrial Chemicals and Raw Materials

The new year has opened with improved demand for home and export. The Continent continues to compete strenuously for business, and the stabilisation of currencies and continental associations to control prices in many of our leading chemicals have reduced the margins previously existing between home and foreign manufacturers. Generally, whilst we do not look in 1927 for abnormal or material advances, we do not look for reduced prices.

Coal Tar Products and Intermediates

Increased supplies of coal at lower prices following on the strike settlement should stimulate production. Great ingenuity is being displayed in the more efficient use of coal through low temperature carbonisation and synthetic methods. These promise to revolutionise the industry, especially in our own country, where coal is abundant, and we may expect further progress in 1927, introducing new and cheaper sources of supply of tar products.

Fertilisers

Synthetic methods of production in all large industrial countries have already had their effect on older sources of supply, and prices are tending in a downward direction for main products such as sulphate of ammonia and sodium nitrate. The latter product is causing Chilé serious thought.

Wood Distillation Products

The most revolutionary progress has taken place in the synthetic and fermentation production of material previously obtained from wood and vegetable matter. This industry is no longer in a position to compete against newer methods of production of acetone, methyl alcohol, acetic acid, amyl alcohol, butyl alcohol, etc. These methods have contributed largely to the new and rapidly growing demand for lacquers, requiring nitro-cellulose, acetyl cellulose, solvents and plasticisers."

The list of prices which follows the report indicates that prices of chemicals in January this year were, on the whole, at figures slightly above the lowest prices in 1926.

Acids

There is a slow improvement in trade as far as the export of acids is concerned, but the chief difficulty in this branch of industry appears to be that British makers cannot supply acids at sufficiently competitive prices, with the result that prospective buyers go to the Continent or America and obtain supplies of a slightly inferior quality at lower prices. Some of the pre-war orders are coming back to this country. South Africa is again buying from Great Britain, and Spencer, Chapman and Messel state that they have received several orders from South America at prices higher than those offered from the continent, and in spite of an unfavourable rate of exchange. Many markets, however, are monopolised by continental makers, who can supply at prices with which British producers cannot successfully compete.

At the Department of Overseas Trade it was pointed out that the increase of chemical exports shown in the returns for April could not, of course, be taken as absolute evidence of a trade revival, as the figures only related to a single month. There was a world wide demand for heavy chemicals, and, it was stated, the demand was well met by this country, but the same could not be said of dyestuffs and drugs, for the competition in these cases was much keener. The biggest markets for these branches of the industry were within the Empire, or in countries where British interests were well established, as in South America; but the world markets for British drugs and dyestuffs was not as big in proportion as that for heavy chemicals.

Fine Chemicals

Although, naturally, the firm does not refuse orders from abroad, Hopkin and Williams state that they rely on the home market for trade. However, what export trade is done in fine chemicals and reagents is stated to maintain its normal level.

Difficulties in Foreign Markets

That price and quality are not the only factors taken into consideration by overseas buyers was revealed by inquiries of a well-known firm of fine chemical producers. Regrettable as it may be, it was stated there is in South Africa a certain amount of anti-British feeling, due in some measure to the increasing number of Boer teachers in laboratories who refuse to use British chemicals purely on grounds of nationality. To a certain extent this feeling exists in India as well, but in Australia and New Zealand the support for British produced chemicals and reagents is much more pronounced, although price cutting by German competitors is sometimes so severe that it is almost impossible to meet it without a loss.

The tradition that for the highest class of work the German chemicals have no equal in the world, is, we are informed, rapidly disappearing, where it survives at all, and the reputation for high quality of certain British products is, slowly but surely, gaining ground and leading to an increased demand overseas.

While Australasia is a good buyer, Canada is a difficult market in which to gain ground owing to the proximity of the United States, which holds a practical monopoly in the trade.

On the whole, there has been a definite though gradual increase of exports and fine chemicals, and it is hoped that in the near future the state of affairs will improve still more.

Chemical Plant

Grinding and Metallurgical Machinery

A very encouraging statement was made by a representative of International Combustion, Ltd., which in the last twelve months is reported to have doubled its turnover on machinery for metallurgical, chemical, mining and coal mining purposes.

"Germany takes particular interest in the grading of coal, and several large orders for screens have been received from that country," a representative of THE CHEMICAL AGE was informed. "Grinding machinery for ores has also been sold to Germany, while trade is being developed in Rhodesia, where the opening up of mines has created a demand for grinding and crushing machinery." Besides these markets, the company has also received orders for Raymond Mills, Hardinge Mills, and coal screens from many other countries, including France, Spain, Africa, Italy, and Turkey. The demand from Germany, particularly of coal screens, is, it was stated, due to the fact that the Germans have not specialised in this type of plant. In countries where works are being operated by the company, the market for British exports is either closed or strictly limited, so that in addition to supplying these countries by internal production, there is a large export trade with many other countries.

Evaporators, Oil Extraction Plant, etc.

During the year many orders have come to this country for evaporators, soap plant, and the like, and Spain is reported to have been a good customer in the year for oil extraction and milk plants, and for caustic soda apparatus. The firm of George Scott and Sons, Ltd., report that they have received large orders in this direction. They have also received an order from Italy for apparatus for drying sugar beet, under the Dr. de Vecchis process, while German chemical manufacturers appear to be satisfied with British-made evaporators to the extent of placing more orders in this country, and in one case an order was made for the extension of an apparatus laid down before the war. Caustic soda soap and oil extraction plants are in demand in India, but much business from the East is delayed by the omission of inquirers to state their needs fully or to give complete details of working hours or of existing plant, and thus progress is retarded. Together with the grinding section, this branch of industry appears to have made the best recovery from the coal strike, which, of course, brought work almost to a standstill, and it may be stated that the future looks very hopeful.

American Co-operative Research Fellowships

EXCELLENT opportunities for training in methods of scientific research, along mining and metallurgical lines, are afforded by a series of fellowships offered by a number of leading United States educational institutions for work in co-operation with the United States Bureau of Mines, Department of Commerce, covering the educational year 1927–28. Students holding these research fellowships are assigned to assist in the solution of certain problems on which members of the technical staff of the Bureau of Mines are working, and the successful completion of their tasks makes them eligible for various degrees. Students receiving this highly specialised training are in considerable demand in the industrial world.

Two Overseas Markets for British Chemicals

Indian and Argentine Demands Analysed

In view of the great interest which is being taken in overseas markets, the following analysis should be of some interest.

INDIA provides a valuable market for the sale of chemicals, and chemical preparations and the requirements of the country, particularly for industry, are steadily increasing. Imports of all classes of chemicals, except medicines and chemical manures, were valued in 1925 at roughly £1,350,000. Great Britain was responsible for about 63 per cent. of this total, but in 1913 British manufacturers controlled over 74 per cent. of the trade.

The following are figures relating to the chief classes of chemicals exported from the U.K. to India :—

	1923.	1924.	1925.
Chemicals other than drugs and dyes :			
(*a*) Sodium compounds ..	£349,503	£393,415	£369,859
(*b*) Other sorts	£511,495	£464,193	£509,121
Drugs and medicines	£515,098	£577,378	£618,235
Dyes and dyestuffs.....	£180,676	£79,538	£93,011

It will be seen that trade in dyes and dyestuffs has declined. German competition in the latter was particularly severe in 1924-25, but has since abated. American firms are increasing their activities, however, and there is plenty of room in this and other directions for British manufacturers to extend their trade at the expense of competitors. The principal acid imported is tartaric, supplies of which are obtained chiefly from Great Britain, and, to a smaller extent, from France and Italy. The U.K. also supplies the bulk of nitric, sulphuric, and carbolic acid imported. Sulphuric acid, however, is now being produced in India, and imports are likely to decline. Bleaching materials, chiefly powder, constitute an important item, and the demand is likely to grow. America and Japan compete for this trade, but British firms satisfy most of the demand, and with continued effort they should almost eliminate their competitors from the field. Of the soda compounds imported, sodium carbonate, which is required for bleaching, dyeing, and for the soap, glass, and paper industries, is by far the most important. Great Britain enjoys a virtual monopoly of this business, but only controls about half the available trade in potassium compounds; Japan, Italy, and Sweden sharing most of the remainder.

Demand for Disinfectants

An important and growing market is offered for the sale of disinfectants, imports into India from the U.K. amounting to 30,355 cwts. in 1925, compared with 19,534 in 1924. British disinfectants are well known and liked, and so long as active sales organisations are maintained and prices are competitive, they should continue to dominate the market. Trade in drugs and medicines is also a valuable and increasing one, the most important items in request being proprietary and patent medicines, quinine salts, camphor, cassia lignea, and morphia and preparations of morphia and opium. Keen competition must be faced in connection with quinine salts and patent medicines, whilst trade in general drugs is also becoming more competitive. America, Japan, France, and Java are among the chief rivals. Germany is the largest individual supplier of dyes and tanning substances. The value of coal tar dyes imported from that country during 1925 was 82 lakhs of rupees out of a total importation of 143¼ lakhs. Great Britain's share, although valued at only 11¼ lakhs, represented an advance of 3½ lakhs over 1924. This small increase is encouraging, and if sales organisations are improved further progress should be possible.

Argentina

The Argentina Republic consumes important quantities of chemicals, and requirements are mainly satisfied by imports. The market, moreover, is particularly valuable since the local production of chemicals is small and is not likely to develop with any rapidity. Great Britain holds but a moderate share of the entire business, and the position should be capable of great improvement. The following table of imports in 1925 gives indication of the chief chemicals in demand and the strength of British sales :—

	Total Importation. Kilos.	From U.K. Kilos.
Acids, all kinds	1,659,308	79,857
Coal tar and products	1,607,840	1,380,097
Explosives	711,416	352,851
Soda compounds.....	40,009,080	20,849,613
Rosin	21,672,087	123,745
Arsenic, commercial.....	560,646	10,844
Artificial manures.....	427,924	203,000
Ammonia and compounds	1,298,641	147,907
Salt, rock, common, and table ...	9,322,362	909,422
Barium sulphate.....	2,360,330	—
Alum	455,721	44,052
Sulphate of iron and alum	1,320,775	794,807
Carbide.....	4,700,900	70,356
Aluminium sulphate	1,265,467	412,468
Copper sulphate	1,149,846	87,523
Sheep dip.....	9,175,635	8,070,915

Tartaric acid, used in the wine industry, is the principal acid in request and is mainly supplied by Italy and Germany. Citric acid is also largely used by the wine and mineral water industries, and here again Italy is well to the fore. Imports of sulphuric acid have declined in recent years owing to increasing local production. British firms enjoy the bulk of the trade in coal tar, coal tar oil, and disinfectants, the standard of U.K. products being considered superior. Good business is done in explosives, particularly gunpowder and blasting powder. Silicate of soda, caustic soda, and soda carbonate are all in large and constant demand for soap making, paper making, brewing, glass making, tanning, dyeing, cleansing, bleaching, and other industrial purposes, whilst sulphide of soda is also imported in fair quantities for tanning. Soda carbonate and bicarbonate is mainly obtained from the U.K., but in other directions the dearer prices charged restrict the sale of British products.

Artificial manures have not yet attained an established popularity in Argentina, although fair quantities of sulphate of ammonia and superphosphates are used in the cultivation of grape vines and sugar canes. British firms enjoy a fair share of the trade, and the field is of sufficient potential value to justify the closest attention. Great Britain holds practically a monopoly of trade in sheep dips, whilst a fairly strong position is held with sulphate of iron and alum. Imports of the latter tend to decline, however, owing to the activities of local makers.

Institution of Chemical Engineers

THE following have been elected to full Membership of the Institution of Chemical Engineers: F. T. Airey (superintendent of the chemical section, Salt Union, Ltd.); E. D. Whitelock (chief engineer, Brotherton and Co.); and D. H. G. Powell (oil mills, Punjab). The following have been transferred from Associate to full Membership: C. Barber (chemical engineer and manager, coke-oven by-product department, Norton's (Twidale), Ltd.; J. H. Bingham (works manager, Geo. Glover and Co., Ltd.); and H. W. Webb (head of department of chemistry and industrial chemistry, Cardiff Technical College). The following have been elected Associate Members: A. J. Ambrose (Manly Gas Co., New South Wales); W. Dallas (chemist and assistant manager, Brand's Pure Spelter Co., Ltd.); A. T. Green (technical adviser, Derbyshire Silica Firebrick Co., Ltd.); and W. Johnson (carbonising superintendent, vertical retort installations, West's Gas Improvement Co., Ltd.). Mr. R. G. Heggie (chemist, South African Railway and Harbour Administration Laboratory Workshops, Pretoria) has been transferred from Graduateship to Associate-Membership.

A Survey of British Chemical Industry

Production Capacity and Actual Production

The following statement relating to production capacity and actual production in the British chemical industry is taken from the monograph on the chemical industry addressed to Committee B. of the Preparatory Committee for the International Economic Conference of the League of Nations. The Association of British Chemical Manufacturers is responsible for its preparation. It is clearly pointed out that the figures of total production are admittedly an estimate.

1. Sulphuric Acid

In pre-war days this chemical was generally regarded as the most important heavy chemical for use as a reagent in almost every staple industry.

To-day probably about one half of the sulphuric acid manufactured in the world is used in converting phosphate rock into the fertiliser, superphosphate of lime. The second largest use is in connection with the recovery of ammonia at gasworks and at coking plants, where the by-products are recovered. In this way more than 1,000,000 tons of sulphuric acid is used annually in the production of sulphate of ammonia for use almost entirely as a fertiliser.

Other large uses of sulphuric acid include the refining of petroleum oils (especially in the United States of America), the pickling of iron and steel products, and the manufacture of hydrochloric acid, this latter use, however, having decreased materially of recent years owing to the introduction of modern processes for the manufacture of bleach.

In smaller quantities, but nevertheless in considerable quantities, sulphuric acid is used in almost all industries. Strong acid is used in the manufacture of fine chemicals, medicinal and photographic, and in the manufacture of dyestuffs and of high explosives. Weaker sulphuric acid is used in the textile industries for bleaching and dyeing, in the manufacture of copper sulphate for use as an insecticide, in accumulators (now so widely used in the motor and wireless industries), in the refining of metals, for example, gold, and in the manufacture of a large number of sulphates for use as such, including alum, iron, sodium, magnesium, manganese, etc.

Although in pre-war days sulphuric acid was regarded as an index of chemical and industrial progress, the same is not the case to-day to a like extent, and the future of the sulphuric acid industry is being very greatly influenced by progress in chemical research having found alternative methods of manufacture whereby sulphuric acid is rendered unnecessary.

Instances of processes where the tendency is to replace sulphuric acid are as follows :—

The superphosphate industry, where the latest processes consist in the production of elementary phosphorus from phosphate rock by use of the electric furnace, and the subsequent burning of the phosphorus to form phosphoric acid, which is then brought into union with ammonia or other nitrogen bases, or potassium.

In the nitric acid industry the use of sulphuric acid for the decomposition of Chili saltpetre is being largely displaced by the production of nitric acid from the air either by the direct production through the Arc process or by indirect synthesis by way of synthetic ammonia produced by one of the numerous synthetic processes based on the Haber-Bosch principle.

Hydrochloric acid is now being produced in considerable quantities by the direct union of chlorine and hydrogen, the chlorine being produced as a by-product in the electrolytic production of caustic alkali.

Again, the chemical principle of " double decomposition " is being used largely to eliminate the direct use of sulphuric acid ; for example, ammonium nitrate is made from nitrate of soda and sulphate of ammonia, the sulphate radical being in its turn obtained by interaction between gypsum (anhydrite) and ammonium bicarbonate.

There are also a number of modern catalytic processes taking place in the gaseous phase, whereby the use of sulphuric acid is eliminated ; such processes include the manufacture of formic and acetic acids, alcohols and numerous other simple organic compounds.

Another feature of the sulphuric acid industry, to which it is necessary to refer, is the fact that during the war very large quantities of sulphuric acid plant were erected purely for war purposes. Doubtless many of these plants have now been scrapped, but certainly many of them still remain, with the result that the productive capacity for sulphuric acid of most of the leading industrial countries is very materially in excess of the countries' demands. When it is borne in mind that sulphuric acid is a commodity which is cheap in value, but which is very difficult and costly to transfer from one place to another, it will be seen that the solution of this problem is not to be found in encouraging an export trade, but in the scrapping of redundant plant.

The following table, many of the figures in which are obtained from private sources, gives an approximate estimate of the quantity of sulphuric acid manufactured in the countries named. Unfortunately authentic statistics in the main are non-existent, so the figures must be taken only as an approximation :—

SULPHURIC ACID PRODUCTION.

Metric tons of 100 per cent. H_2SO_4. ('000 omitted.)

	Pre-war. (1913/1914.)	1925.
Austria	350*	44
Belgium	420	462
Czecho-Slovakia	—	130
Denmark	62	109
France	900	1,500
Germany	1,686	1,125
Great Britain	1,082	848
Hungary	—	50
Italy	600	770
Netherlands	320	350
Spain	60	320
Sweden	77	88
Switzerland	30	30
Canada	40	60†
United States	2,250	4,257
Japan	70	210‡
South Africa	—	60
Australia	—	150

* Includes Hungary. † 1920. ‡ 1922.

2. Nitrogen Fertilisers

The present production of nitrogen in the United Kingdom is almost entirely in the form of ammonia, and according to the alkali inspector's report for the calendar year 1925, was equal to 88,450 tons of 2,240 lb. each, calculated as pure nitrogen.

The total capacity of nitrogen works in the United Kingdom may be put at about 91,720 tons of pure nitrogen per annum, the bulk of this being produced at shale oil, gas and coke oven works which produce it as a by-product. An increase of about 50,000 tons of pure nitrogen is expected to take place shortly at the air nitrogen works at Billingham.

As regards the world production of nitrogen, the capacity of the by-product plants may be taken at about 360,000 tons of pure nitrogen per annum. As regards the synthetic plants, if the whole of the capacity for producing cyanamide is included, a total of something like 850,000 tons of pure nitrogen per annum would be reached, but it is very doubtful whether much of the cyanamide plant still in existence is capable of producing except under war conditions. Excluding these uneconomical units, the present capacity and actual output are probably more nearly represented by the following table :—

	Capacity.	Actual Output.
	Tons of 2,240 lb.	
Synthetic Nitrogen	650,000 tons	588,000 tons
By-product Ammonia	360,000 ,,	333,200 ,,
Chile Nitrate/Soda	465,000 ,,	399,600 ,,
	1,475,000 ,,	1,320,800 ,,

The total world production of nitrogen in tons of 2,240 lb. of pure nitrogen for the last three fertiliser years ending

May 31 was probably something like the following :—

	1923/24.	1924/25.	1925/26.
By-Product Sulphate/Ammonia	275,000	290,300	305,700
Synthetic Sulphate/Ammonia ..	231,000	254,800	289,000
	506,000	545,100	594,700
Cyanamide	104,000	115,000	150,000
Nitrate of Lime	18,000	25,000	30,000
Other forms of Synthetic Nitrogen	58,000	66,000	119,000
Other forms of By-Product Nitrogen	30,000	32,400	27,500
Total production	716,000	783,500	921,200
Deliveries of Chilean Nitrate of Soda in consuming markets ..	340,000	363,000	324,200
	1,056,000	1,146,500	1,245,400
Estimated total for agricultural consumption	900,000	983,100	1,072,000

3. Superphosphate

The process of manufacturing superphosphate—or monobasic phosphate of lime—originated in Great Britain during the decade of 1840/1850, and is attributed to John Bennet Lawes. It consists of grinding to a fine powder either bones or mineral rock phosphate, subsequently dissolving the ground material in sulphuric acid. For some years bones only were used for the purpose ; but in the early part of the decade 1850/1860, Suffolk coprolites were discovered and adopted for the purpose, the resultant product being termed " mineral superphosphate " to distinguish it from the material derived from bones. Practically all the superphosphate made to-day is " mineral superphosphate." The discovery of the deposits of mineral rock phosphates, and later of the Pebble beds in Florida, and of the enormous resources of phosphate of North Africa, resulted in a great and world-wide development of the industry, and, up to the outbreak of the war, the world production of superphosphate showed an almost continuous annual increase. So rapid was the extension of capacity for production that it undoubtedly outstripped the demand, and there were consequently recurring periods of severe depression in this important industry during the 24 years, 1890/1914, corresponding with the periods of depression in agriculture.

During the earlier portion of the period of rapid development of the industry (1890–1914), European manufacturers found a good outlet for the product in export markets, of which the principal were Spain, Russia, and Denmark within Europe, South Africa, Australia, and New Zealand being amongst the most important of the more distant buyers. The principal European superphosphate exporting countries were Holland, Belgium, Germany, France, and Great Britain ; but in the ten years immediately preceding the war the exports of superphosphate made by Great Britain were steadily shrinking in volume, whilst those of Holland and Belgium were growing.

SUPERPHOSPHATE PRODUCTION IN METRIC TONS.

Country.	Production. 1913	Production. 1925	Increase. Tons.	Decrease. Tons.
Germany	1,818,700	660,400	—	1,158,300
Poland	196,172	192,346	—	3,826
Czecho-Slovakia	—	201,857	Comp. figures not available	
Belgium	450,000	381,000	—	69,000
Denmark	90,000	218,500	128,500	—
Spain	225,000	722,653	497,653	—
Russia	158,300	62,439	—	95,861
Italy.....	972,317	1,464,056	491,739	—
France	1,920,000	2,379,760	459,760	—
Great Britain	830,000	538,676	—	291,324
Holland	346,000	572,000	226,000	—
Sweden	184,259	213,500	29,241	—
	7,190,748	7,365,330		

The war had very serious effects upon the superphosphate industry throughout Europe. The needs of the various belligerent States for sulphuric acid for explosive manufacture led to a considerable curtailment of production in those countries, whilst the neutral States found themselves unable to obtain sufficient supplies of the two raw materials required, viz. :—phosphates and pyrites. Those distant countries which were formerly good export markets for European superphosphate, finding their supplies cut off as a result of the war conditions, proceeded at the end of hostilities to erect superphosphate plants of their own, and thus such markets were practically closed to European exports. Other countries within Europe, which formerly imported a substantial portion of the superphosphate they required, erected additional or new plants and are, therefore, now in a position largely to meet their home needs from their own resources.

Conditions such as those outlined have inevitably led to uneconomic competition, and to a lowering of prices to a level below the cost of production in some cases, and the position has been aggravated by unstable currencies.

4. Dyestuffs

The British estimate of the production of aniline dyes in 1913 and 1924 is as follows :—

	1913. Tons.	1913. Percentage of production.	1924. Tons.	1924. Percentage of production.
Germany	135,000	83	70,000	45
United States	3,000	2	30,000	20
Great Britain	5,000	3	15,000	10
Switzerland	10,000	6	13,000	9
France	7,000	4	17,000	11
Italy.....	2,000	2	5,000	3
Japan.....			2,000	1
Other Countries			2,000	1
	162,000	100	154,000	100

After allowing for the inclusion in the German figures of production in branches outside Germany, there is substantial agreement on the 1913 figures. In regard to 1924, the figures in the German monograph over-state, in the opinion of the British, the production in Great Britain and Japan, and under-state the production in Switzerland. The differences between the two sets of figures are not of great moment.

Output Capacity

The British estimate of the capacity of dyestuffs factories throughout the world in 1924 is as follows :—

	Estimated capacity. Tons.	Estimated output, 1924. Tons.	Percentage of output on capacity.
Germany	250,000	70,000	28
United States	60,000	30,000	50
Great Britain	40,000	15,000	38
Switzerland	20,000	13,000	65
France	25,000	17,000	70
Italy.....	10,000	5,000	50
Other Countries	15,000	4,000	27
	420,000	154,000	36

It will be observed that the British estimate of capacity is very much higher than that given in the German monograph, particularly for Germany, Great Britain, and Switzerland. The figure for Great Britain is based on information furnished to the Development Committee of the British Board of Trade, and may be taken as approximately correct. The figures for Germany and Switzerland are a British estimate.

5. Tar Products

As mentioned before, little reference is made to tar distillation, and it may be suitable at this point to say that the output capacity of British Tar Works is from 50 per cent. to 75 per cent. above the quantity available. This is partly due to the seasonal variations in production, and partly to the desire to be able at short notice to meet extraordinary demands. The amount of tar and pitch produced in Great Britain is given below :—

	1925. Tons.	1924. Tons.	1923. Tons.
Tar Distilled	1,689,493	1,813,728	1,692,168
Pitch Produced	519,818	625,222	677,362

Germany is the only serious competitor to Great Britain in the export of tar products in normal times. The production of tar in Germany in 1925 is thought to be about 800,000 tons. Of the pitch produced, Great Britain exported between July, 1924, and June, 1925, a total amount of 398,400 tons, whilst Germany during the same period exported 83,000 tons in the normal manner, and in addition, an estimated 40,000 tons under the Reparation Scheme. It is further estimated that during 1925 Germany exported 25,000,000 gallons of creosote, whilst Great Britain in the same period exported 37,000,000 gallons.

Sir Robert Hadfield on Modern Industrial Needs

Resistant Steels: The Organisation of Research, etc.

At the recent annual general meeting of Hadfields, Ltd., of Sheffield, the chairman (Sir Robert Hadfield, F.R.S.) raised a number of very important issues in his speech. Some points on which he touched are noted below.

SIR ROBERT HADFIELD said that they were met together after a year of unexampled financial difficulty and trouble, the like of which he could never remember in the fifty years since he started his industrial career. The internecine quarrel carried on without rhyme or reason over such a long period of time, if repeated (and threats had already been made to this effect), could only bring ruination in its path and permanently reduce our country's position to a more or less negligible quantity in the markets of the world. Surely some way must be found by employer and employed to prevent there ever being the possibility of such happenings again taking place. Repressive legislation was out of the question. The remedy lay in commonsense and goodwill. Such a solution found no favour with the extremists on either side. Nevertheless, it was the one which must and would prevail. Their own firm had proved its efficacy over a period of forty years or more, and they were not alone in this respect. On the other side, too, there were leaders who realised the folly of force.

Heat-Resisting Steels

The increasing severity of the conditions required to be met in the chemical engineering industries was placing greater and greater responsibility on the shoulders of the metallurgist, as well as the chemical engineer. High-temperature conditions demanded materials of a character quite distinct from that used in the construction of apparatus working at ordinary temperatures and pressures. The phenomenon of heat-scaling provided another example of the urgent call for new materials, and particularly for those possessing resistance to chemical action, necessarily intensified by reason of the high temperatures involved. In the realm of special steels of this nature, Hadfield's had made distinct progress in the last year. There were many cases where materials of a non-metallic nature might be replaced by metallic materials, with advantage both from the point of view of engineering design as well as that of heat conductivity. Castings of Era H.R. (heat resisting) steel were largely used in furnaces for the roasting of zinc ore. The special feature illustrated by this application was the high resistance which their material offered to a sulphurous furnace atmosphere, which had a disastrous corrosive effect on many materials which otherwise might be suitable.

Steels for Corrosive Atmospheres

The material was being applied successfully in their own works in connection with the racks necessary for supporting and spacing motor car spring leaves in the furnace, where they were being heated for hardening. The temperature was 950° C., and with racks of cast iron or mild steel, scaling occurred so rapidly as to choke up the spaces between the teeth in a few months. With similar racks of Era H.R. steel, a life of at least 18 months was obtained. Sheaths of the material were also employed in the furnace for the protection of thermo-couples, and had a similar life. This furnace was oil-fired, and owing to the high sulphur content always found in fuel oil, the furnace atmosphere was of a very sulphurous character. Pyrometer protection sheaths of heat-resisting alloys of the type containing a high percentage of nickel, and more expensive at first cost, were found unfit for further service after only five months' use.

An important development of their Era C.R. non-corroding steels had been recently successfully accomplished. They were now able to roll sheets of this material up to 20 ft. in length, 5 ft. in width and ¼ in. in thickness. When the practical difficulties of handling and working these special steels were borne in mind, it would without doubt be agreed that this was a considerable achievement, and opened up wide possibilities in the construction and further improvement of plant for chemical and other industrial uses. No doubt the future held out considerable scope for these materials, including the chemical industry, of which the ramifications included the important processes of synthesis of many compounds necessary to meet growing world demands. Such materials had long formed the subject of their many researches.

Admitting, as they must do, the importance of science in their national prosperity, it followed that the encouragement of research was an equally vital factor. Fresh discoveries were continually being made, and each brought a host of problems relating to practical applications and further developments. Inventors and discoverers of the first rank could not be made. Their genius was born in them, and flourished best when free from all restraint.

Co-operative or Industrial Research

Much had been said during recent years concerning the possibilities of co-operative research. In some fields, no doubt, there was room for research associations, and some of those bodies had done valuable work, but it was easy to exaggerate their possibilities. In so far as co-operative research augmented individual research, it was worthy of support, but it would never replace the work of the independent investigator, and ought not to be expected to do so. In some instances, the fruits of co-operative research would be shared by those who had contributed towards the expense of the work, but in many cases the successful development of an invention or discovery depended essentially upon the genius, initiative, and energy of the individual, and far better results were likely to be obtained by allowing him to freely develop and to work, untrammelled by any attempt at central organisation.

Without wanting to depreciate the work done by research associations, as in some directions they played a useful part, surely it must be admitted that the primary need was to encourage individual research. They had attained their position in science and industry by the labours of individual scientists and inventors, and, if they were to get the best possible results from their resources of men and materials, they must first give place to encouraging and supporting the work of individuals. In the past, the progress of the private investigator had often been restricted by inadequate resources. How this might be avoided, whilst still retaining the advantages of the individualistic system, was illustrated by the Royal Society's appropriation of Government grants to individual workers with the sanction of a committee appointed for the purpose. Untold benefit arose from these grants, but they were not co-operative research.

Such a system and its industrial parallel, the supporting of the work of individual investigators in the research laboratories of particular firms, were calculated to obtain the best results and keep us in the forefront of scientific knowledge and successful industry. Their own research department, of which the firm was justly proud, contained the necessary appliances and resources for the prosecution of exhaustive, correlated investigations in the various branches of the metallurgy of iron and steel. Apart from the daily routine work of their laboratories, there was included an immense variety of chemical and physical testing, representing the application of the latest scientific methods to commercial purposes; there was always new research work in progress.

Sir Robert referred to the fact that during the past year a great deal of work had been devoted to the reorganisation of their subsidiary, Bean Cars, Ltd., in which company they now had a controlling interest.

Committee of French Chemical Industries

A NATIONAL committee of the chemical industries of France has been formed, for the purpose of maintaining contact between the great chemical undertakings. The constitution of the committee is as follows:—president—M. Revel; vice-presidents—the delegate of the Compagnie d'Alais, Froges et Camargue, M. Alfred Bernheim, president of the Comptoir des Textiles Artificiels; M. H. E. Boyer, president of the Société Chimiques des Usines du Rhône; and Comte de Vogüé, director of the Compagnie de St. Gobain, Chauny et Cirey; secretary—M. Donat Agache, president of Etablissements Kuhlmann; treasurer—M. Lheure, director-general of the Société de la Grande-Paroisse; general secretary—M. Marcel Bourgeois.

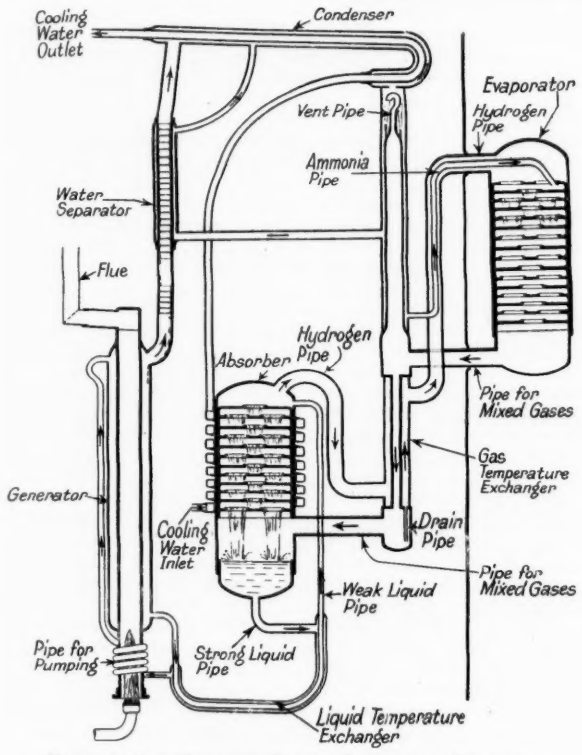
The "Electrolux" Refrigerator

Opening of New Works

SOME time ago we published a description of the "Electrolux" refrigerator, which gives continuously the desired low temperature, say, below 45° F., without the use of any mechanical or moving parts, merely requiring a small gas flame or electrical resistance heating element.

It may be remembered that, as usual, cold is obtained by the evaporation of liquid ammonia, but the resulting gas is liquefied again, merely by adding hydrogen gas instead of using a force pump and mechanical compression, thus taking advantage of Dalton's well-known Law of Partial Pressures. With two or more mixed gases, the pressure is divided between them so that in the above circumstances part of the ammonia gas condenses.

Several minor improvements have now been embodied in the design which still further increase the efficiency and convenience of the refrigerator. Essentially, the modification



ELECTROLUX COOLING UNIT—SECTIONAL DIAGRAM

consists in using part of the liquid ammonia itself as a cooling agent instead of the outside air, and interposing a heat interchanger between the evaporator and the absorber. As usual, the design consists primarily of three separate vessels: generator (or boiler), which is heated; absorber; and evaporator, with a cooler and connecting pipes, all of steel, electrically welded, and containing ammonia, distilled water, and hydrogen, forming a totally enclosed circuit at about 180 lb. pressure.

The generator contains ammonia and water, and by the application of heat ammonia gas passes off continuously through a water separator, which abstracts any water vapour in the ammonia gas and returns it to the generator, and on to a water-cooled condenser which gives liquid ammonia. The latter then travels through the new heat interchanger, added at this point of the circuit into the closed evaporator which consists of a series of trays and baffle plates over which the liquid flows. To the evaporator also hydrogen gas is added so that, since the pressure must always remain the same in the circuit, the liquid ammonia evaporates according to the Law of Partial Pressures, producing intense cold within the cabinet, the evaporator being, of course, the cooling element. The mixture of hydrogen and ammonia gas then passes out at the bottom to the lower part of the absorber, where the heavier ammonia gas goes into solution again in the weak liquor, passing back to the generator, leaving the hydrogen to return to the evaporator, the whole process going on continuously so long as a source of heat is provided to drive off ammonia gas from the strong solution in the generator.

The Opening Ceremony

There was a very large assembly at Luton on Wednesday, May 18, for the opening of the new works of the company, and if the arrangements are typical of the company's business methods one may safely count on management of the most efficient character. The guests were received on a large open floor in one of the workshops, and Sir Robert Horne pressed a button which formally set the machinery in motion. Parties were taken through the various shops by expert guides, and saw the manufacture on the most modern mass production principles both of the refrigerator and of the electrical cleaner. The parts are built up stage by stage to the finished product and the organisation is designed to avoid waste and secure the highest degree of efficiency. These methods of large scale production should enable the company to produce the refrigerator at a comparatively low cost, and it is understood that the aim is to cater on a very large scale for the private residence.

At a luncheon that was subsequently held, Major Wernher, who presided, reviewed the developments of the company and emphasised especially the attention that was given to the well-being of the employees.

Sir Robert Horne, the principal guest, congratulated the company on the success of their undertaking and warmly commended the enterprise as an example of British initiative in adopting the newest ideas from whatever quarter they arose and making the most effective use of them.

Chemical Traders and Merchandise Marks

Operation of the New Act

IN a memorandum prepared by the British Chemical and Dyestuffs Traders' Association on the Merchandise Marks Act, 1926, members are reminded that this legislation comes into force on June 15 next. The following points and instances of how the Act will affect the importer's business are given :—

The 1926 Act does not operate at the time of importation of goods, but only when "such goods are sold wholesale" and "when exposed for sale or sold retail." The position as regards importation will, therefore, remain unchanged, as follows: Under the old Merchandise Marks Acts of 1887 to 1911, foreign goods need not be marked with an indication of origin unless they or the packages are marked with the name and/or trade mark of a British firm, or marked in some manner as to suggest they are of British origin. "Shipping marks," as such, are permitted, and bags, drums, bottles or other containers marked with the usual kind of shipping marks invariably pass through Customs without the addition of an indication of origin. For instance, packages marked for shipping purposes: X.Y.Z./London, or A.B.C./Manchester, or A.A.A./Glasgow, have in the past, and will continue to be, considered by Customs as not contravening the old Acts of 1887 to 1911, always provided the shipping mark is not of a character that it could be connected up with the importing firm or with a brand of some well-known British-made goods. For instance, "A. Brown and Co." might have their goods marked A.B.C./London, but it would be better if they were marked with a combination of letters other than the initials of their name, such as X.Y.Z./London. Certainly they would be liable to experience the detention of their goods if they had them marked A.B. and Co./London.

As to whether (under the new Act) foreign goods stencilled with such shipping marks (which pass the old M.M. Acts) will be allowed to remain on the packages at the time of sale wholesale is so far a matter of doubt. Section 1 of the 1926 Act states "Imported goods bearing the name of any place or district in the United Kingdom must be marked with an indication of origin." A question has been submitted to the Board of Trade asking whether "shipping marks" of the nature described above will have to be removed from the packages and containers at the time of sale wholesale. The Department have so far not given a definite ruling.

B.A.C. and Registration Problem

Annual Meeting of London Section

THE annual meeting of the London Section took place at the registered offices of the Association, "Empire House," Piccadilly, on Friday, May 20. In the absence of Mr. S. R. Price, Mr. E. R. Redgrove took the chair.

After the disposal of the formal business Mr. H. T. F. Rhodes, General Secretary, opened a discussion upon registration. He stated that it was of great importance that interest should be aroused, and a strong opinion formed within the profession. No society, however great in numbers, or however perfect in organisation, could effect anything unless professional opinion as a whole demanded it. The Association had done a great deal in this connection. Continuous propaganda had been carried out not only in the chemical, but in the public press. There was abundant evidence that the public interest in this question was being aroused. This, he felt, was the soundest policy—to do everything possible to assist in forming a really healthy and vigorous interest in any section of the community. Undoubtedly many difficulties remained. Professional opinion was not yet united, and much friendly difference of opinion existed as to the ways and means of carrying the policy through. This, however, should encourage to greater effort, since there was little doubt that the whole profession was agreed upon all the fundamental issues.

Professor Morgan on Registration

Professor G. T. Morgan, president of the Association, stated that it would be unwise to minimise the difficulties of the policy. At the same time, until the profession became in some sense closed, the chemist could not hope for improved status. Chemistry had so enormously increased in scope that inadequate training was a much more serious question than it had been even a few years ago. Obviously registration would be a safeguard in this connection. Again, a form of registration which was not able to adjust the supply of chemists to the demand would not be complete. He considered that an analogy between the profession of chemistry and those of medicine and law must not be pressed too far, since the function of these professions and their relation to the community were different from that of chemistry. This, however, was not to say that registration for the profession of chemistry was impracticable. He intended to indicate that in order to succeed the chemist must develop his policy in a form which took into consideration the particular problems the profession had to face.

It was evident that a great deal had been done by the Association. (Applause.) It was generally minorities who did the work, the majority who later ratified it. The fact that the Association was as yet a young society, far from discouraging them, ought to encourage that energy, the complement of experience, which was the virtue of youth. (Applause.)

The Question of Qualification

An interesting discussion followed, in which Mr. Macdonald, Mr. Gatehouse, Mr. Clark, and Dr. Atkinson joined. The question of the time limit allowed to those without academic qualifications was raised, the General Secretary stating that the standing committee on registration were considering this question. In reply to a question by Mr. Macdonald, Mr. Rhodes stated that the question of title should give no trouble. Members of the profession could hardly be restrained from using the name chemist, and if that were conceded, the matter of official title was not really of great importance.

Mr. Gatehouse remarked that in regard to qualification within the Association, the council recognised no distinction between the A and B qualifications. All full members of the Association were, in the council's opinion, qualified chemists, and as such would be included on the register.

In reply to questions by Mr. Macdonald and Mr. Clark, the General Secretary stated that it must be quite clearly understood that at first registration would effect little more than giving the profession form and shape, but that that was a great deal. (Applause.) Educated men did not combine for the purpose of aggression, but in order the better to serve the community, and to win recognition by education of the public rather than by useless attempts at intimidation. The council had strictly kept this fact in mind in considering the Association's policy.

A resolution proposed by Mr. Dunford and seconded by Mr. Long was carried unanimously:—"That this meeting is in favour of the principle of registration and prays the council to do all that is possible to give effect to the policy as soon as may be practicable."

A discussion followed upon the granting of certificates of membership. The meeting was of opinion that this was not desirable at present, and a resolution, proposed by Mr. Cosbie and seconded by Mr. Barrett, was passed as follows:—"That this meeting, after consideration, considers it neither necessary nor desirable to issue certificates of membership at present."

Mr. C. B. Woodley, Secretary of the Association, gave an account of the position of the unemployment benefit fund, and that of the appointments bureau. He indicated that an increasing number of employers approached the bureau direct.

In connection with salaries a large amount of work had been done. Many members had been advised as to the salary a particular position should carry, and in two cases, through the Association's advice, a member had obtained almost double the original salary offered.

Electrical Molecular Weight Apparatus

THE electrically heated melting-point apparatus described some time ago by Dr. F. A. Mason is now being applied to other uses. Dr. T. Callan has recently pointed out that it has been found in the central analytical laboratory of the British Dyestuffs Corporation that the apparatus is admirably suited for use in the determination of molecular weights by Rast's camphor method, as, by means of a suitable resistance, it enables the requisite fine control of temperature to be easily maintained (see *J.S.C.I.*, Vol. 43, 1924, pp. 3–4T). In this method it is most essential that the rate of heating should be uniform and that it be carried out under conditions as standardised as possible. The use of the electrical melting-point apparatus enables these conditions to be easily fulfilled. Further, owing to the uniform and constantly reproducible rate of heating, the personal factor is largely eliminated, so that the exact fusion point can be determined. A suitable rate of heating can readily be arrived at by making a few determinations with pure substances of known molecular weight, and as this rate of heating can, by the use of the electrically heated apparatus, be easily and accurately reproduced when dealing with substances of unknown molecular weight, the accuracy of the determination is materially enhanced, so that the molecular weight may be quickly obtained to within a few units of the correct figure. Using 220 volts, it is found convenient to use a "coarse adjustment" Rheostat of 250 ohms and a "fine adjustment" Rheostat of 50 ohms in series, or a suitable 300 ohm resistance with vernier control. The apparatus and accessories may be obtained from A. Gallenkamp and Co., Ltd., of 19 and 21, Sun Street, Finsbury Square, London.

This company has also just issued pamphlets dealing with laboratory glassware of various kinds. Monax glassware (an all-British product) shows combined resistance to chemical action and to sudden changes of temperature. Schola beakers and flasks (made in England and described as a service for students) are also supplied. In addition, the firm of course supplies standard volumetric glassware of all kinds, complying with National Physical Laboratory regulations. The firm has circulated, as a supplement to the eighth edition of its catalogue, errata list No. 1, which gives details of alterations in prices which have taken place, a large percentage being due to Government legislation.

New Yeast Industry in Western Canada

A NEW industry, the first of its kind in Western Canada, has been recently brought into operation at Edmonton, Alberta. The Northwest Brewing Co. has installed yeast-making machinery capable of a daily production of a ton to a ton and a half of baker's yeast, not the brewer's variety. The plant, which cost $35,000 to instal, will utilise locally produced rye and other raw products, and the alcohol which is run off as a by-product will probably be denatured and sold for industrial purposes. At present fresh yeast is being imported into Western Canada from the western United States, and the new Canadian product will have an advantage in time of delivery to bakers in Alberta and other western provinces.

Iron Protection by Metal Deposition

Paper before Electroplaters' and Depositors' Society

At a meeting of the Electroplaters' and Depositors' Technical Society, held at the Northampton Polytechnic Institute, on Wednesday, May 18, Mr. S. Wernick, B.Sc., read a paper on "The Protective Effect of Metal Deposits on Iron." The chair was occupied by Dr. W. H. Vernon. The paper was illustrated by lantern slides showing the action of the salt spray on test pieces coated with such metals as zinc, cadmium, nickel, chromium, cobalt, copper, and tin, and also various tables giving experimental results, corrosion data, etc. Dr. Vernon, introducing the speaker, said that the problem of the rusting of iron was undoubtedly one of the most important in the field of corrosion, owing to the fact that the corrosion actually accelerated as time went on. With copper, there was, on the other hand, a retarding effect, and thus articles in copper and bronze had survived long after those of iron had completely disappeared. Iron was so extensively used that any method which would effectively protect it was worth very close study.

In opening his paper, Mr. Wernick said that the three important factors which entered into electro-deposition for rust protection were the nature of the protective metal, the thickness and condition of the deposit, and the conditions under which it had been deposited. So far as the first two points went, a useful guide was found in applying Nernst's solution pressure theory and the normal potentials of the metals commonly deposited. The same theory gave us a good picture of the mechanism of the rusting of iron, and this he outlined. It was thus seen theoretically that of the metals which had been deposited, only zinc, chromium, and possibly cadmium could be expected, by acting anodically to the iron, to act as rust preventives. The conditions of deposition were, however, extremely important factors; such factors as the preliminary treatment, porosity of the base metal, structure of the deposit, type of solution used, throwing power of the solution, mode of handling, and the final finish all entered into the production of an efficient deposit. The throwing power of a solution was particularly important in the case of articles with sharp bends or deep recesses. This fact, together with the fine structure obtainable from cyanide solutions, accounted for the marked superiority of these baths over acid sulphate solutions in the case, for example, of zinc.

Deposits of Various Metals

Electrolytic zinc was superior to zinc deposited in any other way, on account of its great purity. Nickel could act as an efficient protective, provided its thickness was at least 0·001 inch. Cobalt had given very good results with a copper underlay, and had stood up better than a copper-nickel deposit. Cadmium was certainly comparable with zinc as a rust preventive. Chromium gave varying results mainly of a disappointing character—probably due to its proneness to passivity; a copper-nickel underlay gave improved results. In conclusion, he stressed the need for a standard corrosion test which should be laid down to render the results of different investigators comparable.

A communication was read from Mr. T. H. Turner, M.Sc., drawing attention to the unsatisfactory condition of modern commercial electroplate and the consequent increase in the specifications for "all-black" finishes. He heartily supported the suggestion for a standard corrosion test, which he proposed should be taken up in collaboration with the National Physical Laboratory and the British Engineering Standards Association.

Mr. E. A. Ollard said failure of electroplate was rather different from that of ordinary metal. He outlined three types of failure: (1) The plate itself gradually disappeared; (2) Pits formed which opened out, causing the rust to spread; (3) The plating broke clear away. It would, therefore, be difficult to obtain corrosion data by weighing. In the case of chromium, porosity resulted from strains in the deposit. An underlay of copper to nickel was not such good practice as a coat of nickel treated anodically, then coppered, and again nickelled. The adhesion of this combination was extremely good.

Mr. S. Field said that heavy lacquers certainly increased the life of a deposit, but their object should be to get a plate which would not require a lacquer. In regard to porosity, even the smallest pore had been shown by U. R. Evans to set up corrosion. Electrolytic zinc had a considerable advantage over galvanised zinc in its purity; the latter after use often contained 4 per cent. of impurity, mainly iron or lead. A standardised salt spray was perhaps not the ideal corrosion test. Tests which were more in accord with atmospheric conditions, covering a longer period, would probably be used later.

The chairman, in closing the discussion, pointed out that an important factor in the life of a deposit was the conditions under which it was to be used, and the tests should have some relation to this fact. Mr. Wernick was evidently of the opinion that a concentrated atmospheric test was the most reliable, and with this he agreed. He wished to know how far oils had been used as a finish—lanoline had been shown to be very useful. The oxide film on metals was probably as important as the metal itself.

Copies of Mr. Wernick's paper may be obtained by application to the hon. secretary, 3, Bridge Street, London, E.3.

The next meeting of the society will be held at the Northampton Polytechnic Institute on June 15, when Mr. E. Downs, M.Sc., A.I.C., will read a paper on the "Electro-Refining of Silver."

Chemical Workers' Annual Sports

The first annual sports and gala day, organised by the National Union of Drug and Chemical Workers, was held at Herne Hill Track on Saturday, May 21. A good programme of events was arranged, all entries being limited to members of labour organisations, industrial or political. Shields, cups, and prizes put up for competition were valued at over £120. Results: 100 yards (open), V. Farrant (1917 Club); 100 yards (vets.) (open), W. Saker (Tufnell Park Harriers); 100 yards (trade), A. Bryer (Willows Francis); 440 yards (trade), A. Bryer (Willows Francis); 1 mile flat (open), Pritchard (Coopers' Trade Union); 1 mile walk (open), J. F. King (Brighton Labour Party); 1 mile walk (trade), W. Law (May and Baker); tug-of-war (open), British Workers' Sports' Federation Cup, won by the London Fire Brigade from Morgan's Crucible Co.; tug-of-war (trade) for London Challenge Cup, won by May and Baker from Harker, Stagg and Morgan; relay race (open) for Sir Patrick Hastings' Shield, won by Printing and Paper Workers' Union; relay race (trade), for London Challenge Shield, won by Allen and Hanbury; half mile and one mile cycle handicap (open), both won by W. Stone (Transport and General Workers' Union); long jump (open), J. H. Fuller (Harker, Stagg and Morgan); half mile cycle (trade), T. J. Merriman (Harker, Stagg and Morgan); obstacle race (trade), T. Atkinson (Burton and Sons); 100 yards (vet.) (trade), W. Rickman (Burgoynes).

After short addresses by the joint secretaries (Messrs. Alec. McLeod (N.U.D. and C.W.) and G. Bennett (B.W.S.F.), prizes were presented to the winners by Mrs. A. J. Gillian, wife of the general secretary of the National Union of Drug and Chemical Workers.

Protection against Carbon Monoxide

The possibility of the formation of carbon monoxide exists in all processes of combustion, and claims its victims in industrial works, in fires, and catastrophes through fire damp. The danger of carbon monoxide poisoning is particularly great where the gases which contain carbon monoxide, such as lighting gas, water gas, generator gas, blast furnace gas, etc., are manufactured or employed.

This gas has hitherto offered the most stubborn resistance. After much intensive investigation work in a laboratory specially prepared for the purpose, by Wallach Brothers, Ltd., 49, Tabernacle Street, London, E.C.2, there has been produced a compound which converts the carbon monoxide of the poisoned atmosphere into the comparatively innoxious carbon dioxide, having regard to the quantity involved. In the course of this work, apparatus for respiratory protection has been constructed, the filters of which, known as Filter No. 64, are filled with this special composition. In connection with the "Evertrusty Degea" CO mask, this filter, besides ensuring safe protection against carbon monoxide, is claimed to give adequate protection against the vapours of prussic acid, ammonia, sulphuretted hydrogen, phosphoretted hydrogen, arsenicated hydrogen, hydrochloric acid, sulphurous acid, chlorine, and all organic vapours such as benzol, etc.

Gypsum Production in Canada

Official Report on Deposits and Shipments

THE High Commissioner for Canada in London has received from the Dominion Department of Mines at Ottawa a statement prepared under the direction of Dr. Charles Camsell, Deputy Minister of Mines, in which it is stated that gypsum is second only to coal as the most important mineral produced in the provinces of Nova Scotia and New Brunswick.

In New Brunswick, the chief production has come from the occurrences at Hillsboro' in Albert County. These deposits contain an exceptionally pure quality of gypsum and Hillsboro' products, for this reason, are in high favour with the building trades not only in Canada but also in the United States. The Albert Manufacturing Co., near Hillsboro', owns the largest mill in the region, to which the rock is brought from the quarries, some two miles distant, to be manufactured into hard wall plaster, finishing plaster, and dental plasters of different grades. These products are largely sold in Canada, but a certain quantity also goes to American purchasers and a good market has been developed with Australia and New Zealand. Only about one-fourth of the gypsum quarried is exported in the crude form. Occasional shipments of anhydrite, a mineral closely allied to gypsum, are also made to the southern United States for use as a fertiliser.

In Nova Scotia occurrences of gypsum are widespread and are the largest of any at present known in Canada, contributing 75 per cent. of the total Canadian production. Nine million tons of gypsum have been quarried in this province since 1872, the greater part of which has been shipped mainly in the crude form to the United States, where it enters free of customs duty. Production for the province in 1925 reached a new high level of 471,174 tons, and statistics now available for the first six months of 1926 indicate that this high output will be maintained. Wall plaster made from the Nova Scotia product has a finer texture, smoother working qualities, and a more uniform "set" than that produced from "U.S. Rock" and is generally in demand in the United States for these reasons. The chief producing area is at Windsor, Hants County, where five or six companies are operating. The Wentworth and Walton deposits are the principal producers, shipments of crude gypsum from these properties during the summer season reaching 300,000 and 75,000 tons respectively. The Canadian Gypsum Co., owning and operating the Wentworth deposits, is a branch of the United States Gypsum Corporation, with mills at Long Island, New York. Another firm, the Windsor Plaster Co., manufactures wall and finishing plasters in the province and supplies a fair demand locally as well as in the provinces of Quebec and Ontario.

Next in importance are the deposits of Victoria county, Cape Breton Island. In this district the Iona Gypsum Products, Ltd., calcines the product of its own quarry and manufactures finishing, hard wall, and dental plasters. The company has been in existence only for about four years, but a good market has already been developed for its products in Canada and in the Antipodes.

Most of the deposits and mills referred to have the advantage of nearby rail and sea-board facilities, and with increased activity in the building trades and a consequently increased demand for the best fire-resisting materials, the industry continues to expand. The extent and quality of these gypsum deposits are such as to indicate that an adequate supply will be forthcoming from this region for many years and new developments may be confidently awaited.

Production and Shipments

The six months ended June 30 last marked a considerable advance in the production of gypsum in Canada. Shipments totalled 250,369 tons valued at $964,638, as compared with 234,706 tons worth $906,052 shipped in the same period of 1925. The production by provinces was as follows: Nova Scotia, 167,562 tons; New Brunswick, 19,504 tons; Ontario, 37,754 tons; Manitoba, 18,439 tons; and British Columbia, 7,110 tons. Average values per ton received by operators follow: lump, $1·48; crushed, $1·84; fine ground, $5·96; and calcined, $9·46. The total quantity of gypsum mined in Canada during the period was 277,541 tons, of which 75,886 tons or 27·3 per cent. was calcined.

Imports of gypsum were recorded at 454 tons worth $19,841, and exports of Canadian gypsum amounted to 152,585 tons, made up of 145,650 tons crude and 6,935 tons ground, with a total value of $323,274.

The following were the shipments of gypsum in Canada, January 1 to June 30, 1925 and 1926:—

	1925		1926	
	Tons	Value	Tons	Value
		$		$
Lump or mine run	44,908	62,719	32,738	48,480
Crushed	114,892	211,934	149,108	375,433
Fine ground	3,043	18,897	2,207	13,168
Calcined gypsum sold ..	31,299	194,093	22,859	270,088
Calcined gypsum used in the manufacture of gypsum products	40,563	417,809	43,457	957,469
Total sold or used ...	234,705	906,052	250,369	964,638

Low Grade Fuels for Steam Generation

Use of Raw Lignite in Canada

IT is well known that great attention is being given in Canada to the question of using the vast deposits of lignite, especially in Saskatchewan, this work being on the three main lines of low temperature carbonisation, briquetting, and utilisation direct in the raw state for combustion, especially in steam boilers. In this latter connection some very interesting results have been obtained on the boiler plant of Drewry's Brewery in Winnipeg, which has the "Turbine" forced draught furnace fitted, following upon the great savings made in the running of the boiler plant on the same lines at the Canadian Pacific Railway Roundhouse in Winnipeg.

The present new installation at the brewery comprises two 1,500 sq. ft. return tubular boilers of the cylindrical pattern, operating at 150 lb. working pressure fitted with the forced draught furnace, hand fired, along with other equipment on the latest principles, including soot blowers. To suit the special conditions the "Turbine" furnace consists of twelve troughs per boiler, each 6 ft. long and 6 in. wide, having 1/16th in. steam nozzles, the average steam pressure being 30–40 lb. per sq. in., reduced from the boiler, while the combustion chamber is 5 ft. 2 in. high.

The installation has proved to be very successful, and as much as 45 lb. of lignite per sq. ft. of grate area per hour has been burned, while many trials have been carried out with mixed fuels, including the use of anthracite screenings, coke breeze, and semi-lignitic coal from Alberta, in addition to Souris lignite from Saskatchewan.

As typical of the results obtained, in one case on a 10-hour trial 16,400 lb. of lignite were used at 4·25 dollars per ton, the steam generated being 76,590 lb., that is 4·67 lb. of water per pound of lignite, a great economy as compared with the former methods of having to burn American or Canadian bituminous coal without proper furnace conditions. Another typical test was with equal weights of Souris lignite and Pocohontas highly bituminous coal screenings from the United States, the latter costing in Winnipeg 8·50 dollars. Under these conditions the figure for the evaporation was 8·5 lb. of water per pound of mixture, while with Pocohontas coal alone the figure works out at 10·14 lb., also an extremely good result.

Finally, it may be stated that the average analysis of Souris lignite as delivered at Winnipeg is 31·4 per cent. fixed carbon, 26·6 per cent. volatile matter, 33·5 per cent. moisture, and 8·5 per cent. ash, with a heating value of 6,970 B.Th.U. per pound, obviously a difficult material.

The Future of Arcos, Ltd.

ALTHOUGH it is was announced on Wednesday morning by the Soviets' London representative that "in accordance with instructions received from Moscow all Soviet trading organisations in Great Britain have been instructed to stop immediately the placing of all further orders in Great Britain," no precise information is available with regard to Arcos, Ltd. A meeting of the directors was held on Wednesday, but inquiries as to the result of the meeting met with the reply that no definite conclusions had been reached. It is understood that the Russian Embassy has received instructions to move all the trade shipping under their control from London to Hamburg. M. Mikoyan, the State Commissioner for Trade, declares that whilst existing obligations would be strictly carried through, all trade negotiations would be suspended and operations transferred to another country.

Oils, Chemicals, and Colours

List of Firms Exhibiting

THE following is a list of firms who will exhibit at the International Oil, Chemical and Colour Trades Exhibition, to be held at the Royal Agricultural Hall, London, from June 11 to June 18. Attention must be drawn to the fact that the list is not complete, as negotiations are still in progress with several firms who are likely to become exhibitors :—

Albro Fillers and Engineering Co., Ltd., 34, Holloway Road, N.7 ; Arcos, Ltd., Soviet House, 49, Moorgate, E.C. ; Morris Ashby, Ltd., 17, Laurence Pountney Lane, E.C.4 ; Attwood's Spraying Equipment, Ltd., 86, Rosebery Avenue, E.C.1 ; W. and T. Avery, Ltd., Soho Foundry, Birmingham ; W. S. Barron and Son, Ltd., Ladybellegate Street, Gloucester ; Chas. H. Betts and Co., Ltd., Canada Works, Hanover Street, Birmingham ; Blackstone and Co., Ltd., Stamford, Lincs. ; S. Briggs and Co., Ltd., The Burton Copper and Engineering Works, Burton-on-Trent ; E. A. Brough and Co., 4, Upper Parliament Street, Liverpool ; Bulher Brothers, 9, Lavington Street, S.E.1 ; The Building and Metal Export Co., 48, Rue Malibran, Brussels, Belgium (K. L. Cobb, 88, Fenchurch Street, E.C.) ; Bush, Beach and Gent, Ltd., 24, Monument Street, E.C.3 ; J. Harrison Carter, Engineering Works, Dunstable, Beds ; The Cornbrook Chemical Co., Ltd., Newbridge Mills, Stockport ; John Dale Manufacturing Co., New Southgate, N.11 ; J. Davies and Allen, 43, Basinghall Street, E.C.2 ; Deloro Smelting and Refining Co., Ltd., of Canada, 14, Waterloo Place, S.W.1 ; Thos. Firth and Sons, Ltd., Norfolk Works, Sheffield ; The Fleetwood Chemical Co., Ltd., 9–13, Prince Street, Deptford, S.E.8 ; T. B. Ford, Ltd., Snakeley Mills, Loudwater, near High Wycombe, Bucks ; Joseph Foster and Sons, Soho Foundry, Preston, Lancs ; The Fuller's Earth Union, Ltd., 4, Cullum Street, E.C. ; Wm. Gardner and Sons (Gloucester), Ltd., Bristol Road, Gloucester ; The Graphite Oils Co., Ltd., Grimsby ; Harts Colours, Ltd., The Colour Works, Bredbury, near Stockport ; Harry Heymann, Ltd., 5, Union Street, Bradford ; Leonard Hill, 173, Fleet Street, E.C.4 ; Bernard Holland and Co., 17, Victoria Street, S.W.1 ; Horton Manufacturing Co., Ltd., Rickmansworth ; Howards and Sons, Ltd., Uphall Works, Uphall Road, Ilford ; The Indian Turpentine and Rosin Co., Ltd., Bareilly, India (D. Waldie and Co. (London), Ltd., 130, Salisbury House, E.C.2) ; Industrial Chemist and Chemical Manufacturer, 33, Tothill Street, Westminster, S.W.1 ; International Combustion, Ltd., Grinding and Pulverising Offices, 11, Southampton Row, W.C.1 ; G. T. Johnson and Co., 58, Rathbone Street, Liverpool ; Langley Smith and Co., Ltd., 14–20, St. Mary Axe, E.C.3 ; J. M. Lehmann, A.28, Frieberger Str., Dresden, Germany (H. Keller and Co., 10–11, Colonial Avenue, Minories, E.1) ; H. M. Lummerzheim and Co., Ltd., 7, Rue Du Navire, Ghent, Belgium ; The Manchester Oxide Co., Ltd., Canal Street, Miles Platting, Manchester ; Marchant Bros., Ltd., Verney Wharf, Verney Road, St. James's Road, Old Kent Road, S.E. 16 ; Masson, Seeley and Co., Ltd., 14, Howick Place, Westminster, S.W.1 ; Mastabar Belt Fastener Co., 14A, Blackfriars Street, Manchester ; National Time Recorder Co., Ltd., 227–228, Blackfriars Road, S.E.1 ; W. T. Nicholson and Clipper Co., Ltd., King Street, Salford, Manchester ; Reckitt and Sons, Ltd., 40, Bedford Square, W.C.1 ; Roberts Patent Filling Machine Co., 33, Roundcroft Street, Bolton, Lancs ; W. Rowlandson and Co., 75, Mark Lane, E.C.3 ; "Sachtleben" Aktiengesel'schaft für Bergbau Chemische Industrie, Eintrachtstrasse, 163–171, Cologne, Germany (Andrews and Co., Ltd., Blackfriars House, New Bridge Street, E.C.4) ; Sandeman's Varnish, Ltd., 50, Bilsland Drive, Glasgow ; J. W. and T. A. Smith, Ltd., 247–249, Old Ford Road, E.3 ; Sidney Smith and Blyth, Ltd., 35, Garratt Lane, Wandsworth, S.W.18 ; Thomas Smith and Son, 238–240, Whitechapel Road, E. ; Society of Chemical Industry, 46, Finsbury Square, E.C. ; Steele and Cowlishaw, Cooper Street, Hanley, Stoke-on-Trent ; Stevens and Manning, 96, Park Street, Southwark, S.E.1 ; Colin Stewart, Ltd., Winsford, Cheshire ; Strontium Products, Ltd., 45, Wilder Street, Bristol ; Tangyes, Ltd., Cornwall Works, Birmingham ; Thomas and Bishop, Ltd., 37, Tabernacle Street, E.C.2 ; Torrance and Sons, Ltd., Bitton, Bristol ; Transatlantische Handel-Maatschappij, Hamburg, Kaufmannshaus Z. 367, 36, Grosse Bleichen, Hamburg, 36, Germany ; Thomas Tyrer and Co., Ltd., Stirling Chemical Works, Stratford, E.15 ; Utrechtsche Machinefabriek o.d. Frans Smulders, Croeslaan 6, Utrecht, Holland ; The Valor Co., Ltd., Bromford, Erdington, Birmingham ; W. A. C. Pulverisers, Ltd., Astor House, Aldwych, W.C.2 ; The West of England Ochre and Oxide Co., Ltd., The Colour Works, Bitton, near Bristol ; Whiffin and Sons, Ltd., Carnwath Road, Fulham, S.W.6 ; Young's Patent Hygienic Bin Co., Clarence House Showrooms, 4–8, Arthur Street, London Bridge, E.C.4.

Chemical Matters in Parliament

Fuel Research

The amount of coal treated at the Fuel Research Station, East Greenwich, during 1925, was 3,314 tons, stated the Duchess of Atholl (House of Commons, May 17), replying to a question by Mr. Tinker. A considerable proportion of the products from the coal carbonised was used at the station. The value of the untreated gas and tar surplus to the requirements of the station and sold to the South Metropolitan Gas Company amounted to : gas £1,249, and tar £318. In addition, £250 was received from the sale of coke, the balance of gas and coke being used for other work.

Replying to further questions, she stated that the coal-washing plant, as was the case with other large scale plant at the Fuel Research Station, was intended for investigations of general interest, and, as a rule, the coal required was purchased. Special investigations might be carried out for interested parties, when the plant was available.

The crude oil and spirit obtained from one ton of a suitable coal treated by the Bergius method amounted to from 110 to 135 gallons. In addition, a further unknown amount of coal was necessary for power and hydrogen production. The highest yields of dry tar and spirit, observed by the Fuel Research Staff, as obtained from the low-temperature carbonisation of ordinary coal in a large scale plant, was about 21 gallons, but the average bituminous coal would probably not yield more than about 15 gallons. Good quality cannel coal, of which, however, there was only a limited supply, might yield 50 to 60 gallons.

Poison Gas

The Prime Minister informed Mr. C. Wilson (House of Commons, May 24) that the problem of the protection of the civil population against poison gas attack was being closely studied, both in its technical and non-technical aspects. He could not at the present time particularise the steps that were being taken further than to say that they were directed to securing the provision of an adequate personnel, suitably trained in protective measures, and the dissemination at the proper time of full information as to the best methods of self-protection.

"C.A." Queries

We receive so many inquiries from readers as to technical, industrial, and other points, that we have decided to make a selection for publication. In cases where the answers are of general interest, they will be published ; in others, the answers will simply be passed on to the inquirers. Readers are invited to supply information on the subjects of the queries :—

45 (*Arminian Red Bole*).—"I should be obliged if you could enable me to find where I could obtain genuine Arminian Red Bole, used for marking iron or other metal plates."

46 (*Metal for use in manufacture of Hydrochloric Acid*).—"We are at the present time endeavouring to obtain information with regard to a metal used in the plant in which synthetic hydrochloric acid is manufactured. We understand that there is a metal used for this purpose which has proved itself to be highly resistant and therefore very satisfactory."

47. (*Quellin.*)—"We should be glad if you could give us any information as to where supplies of Quellin may be obtained."

48. ("*Lac Laquer*" *Enamel.*)—"Can you let us have the address of the makers of the enamel 'Lac Laquer'?"

49. (*Kent Washing Fluid.*)—A London firm is anxious to obtain the names of suppliers of Kent Washing Fluid for bottles.

50 (*Barytes*).—A Midland firm would be glad to hear from any parties interested in a new process for the purification of English Barytes C/33/1, which, tested in turpentine, produces a very satisfactory white at a low cost. The firm contemplate the erection of works in England.

From Week to Week

THE COURT OF LEEDS UNIVERSITY has conferred the honorary degree of Doctor of Science upon Professor A. G. Perkin.

LADY BENN AND MISS ELIZABETH BENN were among those presented at the Court held on Tuesday.

SIR ARTHUR KEITH, F.R.S., President-Elect of the British Association, was the guest of the Leeds Luncheon Club on Monday, when he delivered an address on "Civilisation and Science."

DR. E. K. RIDEAL and PROFESSOR J. C. DRUMMOND have accepted an invitation to take part in the advanced courses and in the daily conferences arranged by the Institute of Chemistry of the American Chemical Society.

BUTTERWORTH BROS., LTD., glass manufacturers, of Newton Heath, Manchester, have arranged for the transfer to them of the lamp-blowing business of R. B. Clarke and Co., of Oxford Road, Manchester, and have taken over the staff, plant, and stock-in-trade.

RECENT WILLS INCLUDE:—Mr. Jesse Clarkson, of Chorley, Lancashire, late commercial manager of the Heapy Bleach and Dye Works, £12,141.—Mr. Thomas Whitaker, of 14, Oxford Road, St. Annes-on-Sea, and formerly a director of the Bradford Dyers' Association, £22,599.

PRESCOTT AND CO., 12, Broom Lane, Broughton Park, Manchester, announce that they now represent Charles Vermeire van Geeteruyen, rice starch manufacturers, Hamme, Belgium, for the sale of "Negress" pure crystal rice starch, white, blue and cream, and rice combination starch.

FORTY MEMBERS of the Nottingham branch of the Society of Chemical Industry and an equal number of University College science students paid a visit to Gerard Brothers' soap works, Basford, on Thursday, May 19. A short lecture on "Soaps, their composition, manufacture, etc.," was given by Mr. T. H. Gray, a member of the staff.

MR. RALPH LOWE, manager of the Cardiff works of the Western Trinidad Lake Asphalt Co. and Mr. James Arthur Buchannan, plant superintendent of the same company, both of Cardiff, were killed in a motor-cycle accident at Ashton Gate Swing-bridge, Bristol, last week. The accident was caused by a skid, believed to have been due to a mackintosh worn by Mr. Lowe catching in the motor-cycle wheels. "Accidental death" was the verdict.

FIRMS EXHIBITING FERTILISERS, etc., at the Bath and West Show, held at Bath from May 24 to 28 inclusive, were responsible for an important section of the exhibition, and much instructive matter was circulated among the numerous visitors. Among those represented were the Briton Ferry Chemical and Manure Co., Ltd., the Bath Gas Light and Coke Co., J. Carter and Co., the Co-operative Wholesale Society, the Chilean Nitrate Committee, Egyptian Phosphate Co., Ltd., Nitram, Ltd., Osmond and Son, Reade Brothers and Co., and Webb and Sons of Stourbridge. Animal medicines, etc., were shown by 23 firms, and the exhibits of disinfectants, insecticides, and sheep dips were, as usual, very numerous.

MR. A. M. O'BRIEN, who for the last six years has been manager of the National Oil Refineries at Llandarcy, near Swansea, announced last Monday his retirement from his position. A Fellow of the Institute of Chemistry, a Fellow of the Chemical Society, a member of the Institute of Petroleum Technology, and a silver medallist of the City and Guilds of London Institute, Mr. O'Brien has been associated with the Anglo-Persian Oil Co. since 1908, when he was appointed chemist at Abadan. Shortly afterwards he was appointed chief chemist in Persia, a post which he held until 1921, when he took charge of the company's operations at Llandarcy. Mr. O'Brien is the inventor of a continuous process of distillation.

A "CONTINUOUS SYSTEM" INDUSTRIAL ALCOHOL PLANT, with an annual capacity of 1,000,000 gallons, has been recently placed in operation by the Lindsay Industrial Alcohols, Ltd., Lindsay, Ontario, Canada. Ample room has been provided to double the capacity. The plant has storage capacity for 100,000 gallons of molasses and 85,000 bushels of grain. Located on the Trent Valley canal, it has transport facilities for raw material and finished products, both by rail and water. The company has also acquired the properties and equipment of the Hodgson Brothers Chemical Co., Ltd., and will continue producing methyl alcohol, charcoal, and acetate of lime. It is also planned to instal equipment for refining methanol and for manufacturing formaldehyde.

REPLYING TO CHARGES against French potash interests of entering into agreement with German interests to control the industry and thus violating the Sherman Anti-Trust Laws of the United States, Mr. Gilbert S. Montague, counsel for the French interests, states that representatives of the German and French potash industry, together with their attorneys, had a conference, April 13, in Washington, in which they fully and frankly stated their position to Colonel William J. Donovan, assistant to the Attorney-General, and Messrs. Alexander B. Boyce and Russell Hardy, special assistants to the Attorney-General. A later message states that the action against the German and French potash producers is to be continued, it having been found impossible to agree on a plan to settle the case out of court.

FATAL INDUSTRIAL ACCIDENTS in chemical, etc. factories in Great Britain and Northern Ireland during April numbered three.

SUGAR BEET NEWS.—Mr. J. R. Lee, B.Sc., of Leeds, has been appointed by the Essex County Council to the staff of the council, to demonstrate a sugar beet cultivation scheme.

ABOUT 200 ACRES OF LAND between Dunkirk and Beeston, near Nottingham University, have been purchased by Boots' Pure Drug Co., for future development, the nature of which, it is stated, has not yet been decided upon.

IN INFORMED QUARTERS it is regarded as certain that sooner or later, but definitely before the next general election, Sir Alfred Mond will receive a peerage. The possibility of his name being included in the coming birthday honours list is being discussed,

MR. R. ROBINSON, of Birmingham University, has been awarded a Commonwealth Fund Fellowship tenable at an American University for the two years beginning in September, 1927. Mr. Robinson will work on physical chemistry at the University of Pennsylvania.

THE CHILEAN GOVERNMENT is making a complete investigation of the Chilean nitrate industry in order that the Chilean product may compete successfully against artificial fertilisers and regain its former position. Meantime producers in Chile have decided to sell independently from July 1.

TWO MEN WERE KILLED and four others seriously injured on Monday evening at Guest, Keenand Nettlefold's iron and steel works, at Dowlais, Merthyr, when a wooden platform on which they were working tilted and flung them 50 ft. to the bottom of the furnace, which had been put out some time previously.

TWO MEN WERE INJURED and 8,000 gallons of benzine were destroyed by a fire which broke out in the benzine department of Glico Petroleum, Ltd., West Ham, on Friday, May 20. Thousands of tons of sand were hurried to the works to prevent explosions, and firemen made a desperate fight before the fire was prevented from spreading to where about a million gallons of spirit are stored in the works.

UNEMPLOYED INSURED PERSONS in the chemical industry in Great Britain at April 25 numbered 6,075 (males 5,275, females 800); in explosives manufacture 1,388 (males 865, females 523); in paint, varnish, etc., manufacture, 810 (males 664, females 146); in oil, grease, glue, soap, etc., manufacture, 5,449 (males 4,494, females 955). The percentages unemployed in the above industries were as follows: 6·5, 7·5, 4·7, and 6·8. The estimated numbers of insured persons in Great Britain and Northern Ireland in these industries at July, 1926, were: 94,530, 18,590, 17,350, and 80,400 respectively.

WE UNDERSTAND that Messrs. A. P. and H. E. King have resigned their seats on the board of Typke and King, Ltd., Mitcham Common, and are arranging to start business on their own account as chemical manufacturers and merchants, specialising particularly in the production of indiarubber chemicals, such as antimony sulphides, indiarubber substitutes, etc., of which both have an extensive knowledge. Negotiations, we are informed, are in progress for the acquisition of a modern factory where the latest chemical plant will be installed. As soon as production is begun, they hope to interest their friends in the rubber and allied trades in the various chemicals of which they have had experience.

A SURFACE TENSION APPARATUS for rapid and accurate measurement of surface tension of liquids by the ring method has been produced by the Cambridge Scientific Instrument Co., Ltd. A complete determination may be made in about 20 seconds, and results may be repeated, it is claimed, to a high degree of accuracy. Only a small quantity (1 c.c.) is required of the liquid under test. The instrument may be rapidly standardised for relative measurements by the use of pure water at 18° C., or may be calibrated in absolute units C.G.S. Full information regarding the method of use will be found in *Surface Equilibria and Biological and Organic Colloids*, by Dr. P. Lecomte du Noüy, who is the designer of the instrument.

APPLICATIONS ARE INVITED for the following appointments:—A Biochemist for the East Malling Research Station, near Maidstone. The Secretary. June 30.—A Principal of the Battersea Polytechnic, London, S.W.11. The Clerk. June 13.—A Biochemist and a Soil Chemist for the Department of Agricultural and Horticultural Research, University of Bristol. The Registrar. June 4.—A Junior Assistant Chemist for the Directorate of Explosives Research. The Chief Superintendent, Research Department, Woolwich, London, S.E.18.—A Professor of Organic Chemistry in the Indian Institute of Science, Bangalore. Dr. M. O. Forster, c/o Jeremiah Lyon and Co., 4, Corbet Court, London, E.C.3. June 29.—Part-time Research Organiser to the Institute of Brewing. The Secretary, Brewers' Hall, Adle Street, London, E.C.2. June 3.—Lecturer in Chemistry, Regent Street Polytechnic. The Director of Education, The Polytechnic, 309, Regent Street, London, W. Before September.—Two Robert Blair Scholarships in Science and Technology, value £450 each for one year. The Education Officer (T. 2. a), County Hall, London, S.E.1. June 18.—Demonstrator in Organic Chemistry in Bedford College for Women, Regent's Park, London. The Secretary. June 8.—Lecturer in Chemistry in the University of Reading. The Registrar. June 10.

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CELLULOSE, ETC.—The behaviour of cellulose on heating. J. W. Bain. *J.S.C.I.*, May 20, pp. 193–195 T.

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The following information is prepared from published Patent Specifications and from the Illustrated Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at 1s. each.

Abstracts of Complete Specifications

269,235. MIXED FERTILISERS CONTAINING NITRATE, PRODUCTION OF. J. Y. Johnson, London. From I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, January 7, 1926.

The object is to obtain a mixed fertiliser, particularly one containing ammonium nitrate, which is not liable to cake on storage. It has been found that the properties of ammonium nitrate are favourably influenced by the addition of precipitated dicalcium phosphate, which may be added in proportions varying within wide limits. This substance contains about 40 per cent. of phosphoric acid in a form suitable for absorption by plants, so that a mixed fertiliser is obtained containing nitrogen and phosphorus. The addition of superphosphate would be unsuitable since the free acid would liberate nitric acid and would cause a loss of nitrogen. Potassium salts may also be added to obtain a complete fertiliser, but mixtures of ammonium nitrate and potassium salts are avoided. Suitable mixtures include (1) ammonium sulphate-ammonium nitrate 60 parts, precipitated di-calcium phosphate 40 parts, (2) ammonium sulphate-ammonium nitrate 30 parts, precipitated di-calcium phosphate 20 parts, and a potassium salt containing 40 per cent. potash 50 parts.

269,242. BENZOL, PETROL, AND THE LIKE, PURIFICATION OF. K. Cox and P. J. McDermott, 3, Parsonage, Manchester. Application date, January 12, 1926.

The object is to remove sulphurous, resinous, and other undesirable impurities from benzol, petrol, and like oils and spirits, and to polymerise undesirable unsaturated hydrocarbons. The oil or spirit prior to distillation is mixed with persulphate of iron, $Fe_2(SO_4)_3$, and after distillation the distillate is treated with alkali. The purification is improved if the persulphate is mixed with a micro-porous material such as Fuller's earth.

269,243. COMPOSITIONS CONTAINING ORGANIC MERCURY COMPOUNDS. E. C. R. Marks, London. From E. I. Dupont de Nemours and Co., Wilmington, Del., U.S.A. Application date, January 12, 1926.

These organic mercury compounds are particularly for use as fungicides, disinfectants, and insecticides. Mercury compounds when used in the form of dust must be diluted with inert materials, which may be of an alkaline or neutral character, and this has been done by mixing the two materials. In this invention the organic mercury compound is produced by a reaction in the presence of finely divided material so that the particles of the latter carry a deposit of the mercury compound. The mercury compound is produced by the reaction of mercury oxide or a salt with an aromatic organic compound in the presence of a substance of a basic character which will react with the initial materials, or an inert substance. Suitable basic materials include hydrated lime, magnesium oxide, magnesium carbonate, calcium carbonate, aluminium oxide and barium carbonate, and inert materials include clay, charcoal, infusorial earth, barium sulphate, or calcium phosphate. The organic compound employed in the preparation of a mercury salt may be phenol, cresol, naphthol, or chloro-phenols. The inert materials are preferably subdivided so that 80 per cent. of them pass through a 200 mesh screen. Examples of these products are given.

269,302. AROMATIC DERIVATIVES OF FORMAMIDE, PRODUCTION OF. J. Y. Johnson, London. From I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, March 13, 1926.

Ayrl derivatives of formamide are obtained by the action of carbon monoxide on primary and secondary aromatic amines under high pressure. The reaction takes place at ordinary temperature, but is accelerated by heating to 70°–200° C. and by the employment of catalysts such as formic acid or its salts or esters, formamide or its derivatives such as formanilide, and alkali metals or their hydroxides or alcoholates. In an example, aniline is mixed with 5 per cent. methyl alcohol and 1 per cent. of metallic sodium, and the mixture heated in an autoclave to 180°–200° C. in an atmosphere of gaseous ammonia. Carbon monoxide is forced in at a pressure of 200 atmospheres, and the aniline is converted into formanilide. If the reaction is effected at ordinary temperature and without a catalyst, the pressure must be about 1,000 atmospheres.

269,624. CHLORIDE CAPABLE OF REACTION, PROCESS FOR PRODUCING FROM PINENE OR PURIFIED TURPENTINE OIL. F. Hohn, 4, Sigismundstrasse, Berlin. Application date, January 11, 1926.

When pinene is treated with dry hydrochloric acid, bornyl chloride and a liquid chlorhydrate are obtained, and when treated with aqueous hydrochloric acid for a long time dipentene-dichlorhydrate is obtained with a little bornyl chloride. It is now found that if the hydrochloric acid is completely saturated and maintained saturated during the reaction by introducing hydrochloric acid, and the temperature is kept below 15° C., no dipentene-dichlorhydrate is formed but a crystallised chloride, $C_{10}H_{17}Cl$, is obtained. This is converted into camphene by heating, which may then be converted into isobornyl derivatives or camphor. An example is given.

269,625. IRON CARBONYL, MANUFACTURE OF. J. Y. Johnson, London. From I. G. Farbenindustrie Akt.-Ges. Application date, January 11, 1926.

When finely divided iron is treated with a slow stream of carbon monoxide under increased temperature and pressure, it is found that the liquid iron carbonyl is deposited on the iron and prevents further action. It is then necessary to release the carbon monoxide and distil off the iron carbonyl before resuming the process. It is now found that the operation may be conducted continuously if a cooler surface is arranged near the reaction zone, so that the iron carbonyl is conveyed to it by diffusion or convection at substantially the pressure in the reaction zone. If the difference of temperature between the reaction zone and the cool surface is as great as possible and the connection between them wide and short, practically no deposit of the iron carbonyl on the iron takes place and the reaction can be continued until all the iron is consumed. The condensing vessel may be cooled externally by cooling pipes, and the condensing vessel may be arranged below the reaction vessel so that the iron carbonyl runs into it.

269,647. UNSYMMETRICALLY ACYLATED AMINO DERIVATIVES OF ARYLARSENO COMPOUNDS, MANUFACTURE OF. G. Newbery, Stanmer, Blake's Lane, New Malden, Surrey, and May and Baker, Ltd., Garden Wharf, Church Road, Battersea, London, S.W.11. Application date, January 19, 1926.

This process is particularly for the manufacture of unsymmetrically acylated derivatives of 3 : 3¹-diamino-4 : 4¹-dioxyarseno-benzene, and 3 : 5 : 3¹-triamino-4 : 4¹-dioxyarseno-benzene. When polyamino compounds are acylated by direct methods, the product is frequently a mixture of lower and higher acylated derivatives. In this invention, equi-molecular quantities of two different symmetrical aryl-arseno-compounds are brought together, one or both of which contains an even number of unacylated amino groups and one or both of which contains an even number of amino groups which are acylated with the same acid radicle. Thus a symmetrical diacylated diamino-arylarseno compound which may be further substituted may be treated with an equimolecular proportion of the same or a different symmetrical diamino-arylarseno-compound having the amino groups unacylated and likewise further substituted in the nucleus. The reaction is effected in the presence of a common solvent which may be alkaline or acid, and the unsymmetrically acylated product may be separated by adding an organic liquid in which the derivative is insoluble, or by adding an acid or alkali according to the nature of the solvent employed. Several examples are given.

NOTE.—Abstracts of the following specifications which are now accepted, appeared in THE CHEMICAL AGE when they became open to inspection under the International Convention: 246,126 (Soc. of Chemical Industry in Basle), relating to condensation products of urea and formaldehyde, see Vol. XIV, p. 310; 246,501 (Deutsche Gold- und Silber-Scheideanstalt vorm. Roessler), relating to iodising pyridine derivatives, see Vol. XIV, p. 335; 246,842 (C. Räth), relating to 2-amino-5-iodopyridine, see Vol. XIV, p. 362; 247,178 (G. Patart), relating to synthetic manufacture of methyl alcohol and liquid hydrocarbons, see Vol. XIV, p. 385; 250,241 (I. G. Farbenindustrie Akt.-Ges.), relating to nucleal alkylated or nucleal cyclo alkylated arylsulphonic acids, see Vol. XIV, p. 578; 253,122 (G. F. Uhde), relating to synthesis of ammonia, see Vol. XV, p. 209; 255,087 (I. G. Farbenindustrie Akt.-Ges.), relating to chromium-magnesium tanning preparations, see Vol. XV, p. 307; 255,884 (I. G. Farbenindustrie Akt.-Ges.), relating to nickel catalysts, see Vol. XV, p. 332; 258,575 (Electrolytic Zinc Co. of Australasia), relating to electrolytic recovery of zinc from zinc-bearing ores, see Vol. XV, p. 47 (Metallurgical Section); 260,552 (West Virginia Pulp and Paper Co.), relating to conversion of alkali sulphides into sulphites, see Vol. XVI, p. 29.

International Specifications not yet Accepted

267,547. TREATING TITANIUM ORES. I. G. Farbenindustrie Akt.-Ges, Frankfort-on-Main, Germany. International Convention date, March 11, 1926.

Titanium ores are treated with dilute sulphuric acid at 170–180° C. in presence of reducing agents, preferably trivalent titanium compounds obtained by cathodic reduction of a tetravalent titanium salt, or by adding a tetravalent titanium salt with some reduced titanium ore. Copper, copper iodide, or sulphur dioxide are also specified as reducing agents. The bulk of the iron in the ores is thus extracted and removed, and the residual titanium dioxide is dissolved in concentrated sulphuric acid and hydrolysed to obtain iron-free titanium dioxide.

267,554. CATALYTIC MATERIALS. I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, March 13, 1926.

The vapour of iron carbonyl is decomposed to obtain pure iron, which is mixed with a small proportion of alumina, magnesia, or zirconia, and a trace of potassium nitrate, the mixture melted in oxygen, and the granulated product reduced with hydrogen. The catalyst is used for ammonia synthesis.

267,885. SULPHURIC ACID. H. Petersen, 6, Hohenzollernstrasse, Steglitz, Berlin. International Convention date, March 20, 1926.

In the manufacture of sulphuric acid by oxidising sulphur dioxide with nitrous sulphuric acid, the acid is actually produced in only one tower and not more than 25 per cent. of the nitrous sulphuric acid is denitrated so that the amount of sulphuric acid of 16° Bé. obtained is at least three times the amount of nitrogen oxides liberated.

267,901. SYNTHETIC RESINS. Kunstharzfabrik Dr. F. Pollak Ges., 85a, Mollardgasse, Vienna. International Convention date, March 17, 1926.

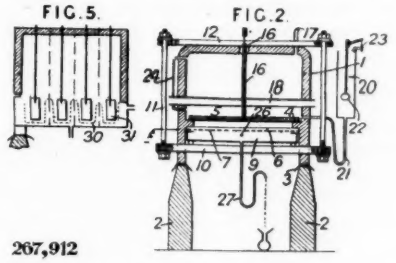
The product obtained by reaction between one molecule of phenol and two and a half molecules of formaldehyde is obtained in colloidal solution by performing at least one stage of the reaction in the presence of sufficient alkaline condensing agent to maintain the products in solution. The dispersity of the system is reduced by neutralising agents such as mono or di-chloracetic or dibromacetic acid, followed by evaporation. The colloidal solution is allowed to set to a gel which is hardened by heat under weakly acid conditions, leaving a white product containing colloidally dispersed water.

267,907. SILICA. W. BACHMANN, Seelze, near Hanover, Germany. International Convention date, March 18, 1926.

To obtain silica of high adsorption capacity, silicon fluoride is treated with a limited amount of water in the form of steam or spray, or with a solution of hydrofluosilicic acid, which acts as a diluent of the water. In this case, a 50 per cent. solution of hydrofluosilicic acid is obtained as a by-product. The silica obtained is very voluminous and 70 grams occupies about 1 litre. It can be used for facilitating chemical reactions and for various other purposes.

267,912. ELECTROLYSIS OF ALKALI METAL CHLORIDES. A. P. H. Dupire, 1, Avenue de Paris, Thiais, France. International Convention date, March 16, 1926.

The electrolytic cell consists of a concrete bell 1 having an internal flange 4 supporting the anode consisting of graphite bars 5 to which a graphite rod 16 is secured. The cell is insulated on legs 2. Cross bars 10, 12 and connecting bars 11



support a diaphragm 6, a perforated cathode 7, and a shallow vessel 9. The electrolyte is supplied from a vessel 20, the inlet to which is controlled by a float-operated valve. A silica tube 18 is provided for the passage of hot water or steam, and outlets 17 are provided for chlorine, 26 for hydrogen, and 27 for alkali. The cathode and diaphragm may be formed with corrugations 30, in which the anodes 31 are placed. The bell may be constructed of fused basalt.

267,925. ALDEHYDES. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, March 19, 1926.

Carboxylic acids are treated with gases containing carbon monoxide at 200°–550° C. in the presence of a hydrogenation catalyst to which activating substances may be added. Benzaldehyde is obtained from benzoic acid vapour and carbon monoxide in the presence of iron, or of a catalyst obtained by reducing an intimate mixture of chromium, and iron oxides, or of a catalyst containing cerium, chromium, and iron. Producer gas or blast furnace gas can be used. Acetaldehyde can be obtained by passing acetic acid vapour and carbon monoxide over a mixture of cobalt and iron.

267,940. KETONES. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, March 16, 1926.

To obtain cyclic ketones, aromatic hydrocarbons and their substitution products are treated with a halide of a β-halogen-substituted fatty acid or substitution product, the halogenated ketone obtained is converted into an unsaturated ketone by means of an agent capable of splitting off hydrogen halide—*e.g.*, by distillation or by the action of sulphuric acid, and the unsaturated ketone is treated with aluminium chloride or sulphuric acid. Thus, the methyl-naphthalene may be treated with β-chlorpropionyl chloride in the presence of aluminium chloride in carbon disulphide, and the 1-methyl-4-β-chlorpropionyl-naphthalene is heated with sulphuric acid and poured into water, yielding 5-methyl-6:7-benzo-1-indanone.

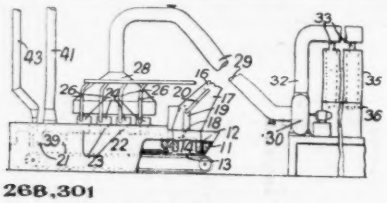
267,952. DYES. Durand et Huguenin Soc. Anon., Basle, Switzerland. (Assignees of the I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany.) International Convention date, March 17, 1926. Addition to 186,057.

The derivatives of leuco compounds of vat dyestuffs described in Specification 186,057 (see THE CHEMICAL AGE, Vol. VII, p. 716) are produced by treating the leuco compounds with aminosulphonic acid in the presence of pyridine or dimethylaniline, with or without an indifferent solvent. The ammonium salts are obtained. Examples of the treatment of leuco-tetrabromindigo and leuco-thioindigo are given.

268,301. ZINC OXIDE. New Jersey Zinc Co., 160, Front Street, New York. Assignees of J. A. Singmaster, Bronxville, New York, and F. G. Breyer and E. H. Bunce, Palmerton, Pa., U.S.A. International Convention date, March 27, 1926.

Coal briquettes are fed at 11 on to a perforated travelling grate 13, and briquettes of zinciferous material and fuel are fed into a chamber 17 heated by combustion gases from a chamber 14 which pass through pipes 19, 20. The air passing

through the grid 13 is regulated so that non-oxidising conditions are maintained above the briquettes. The zinc vapour and gas pass through outlets 23 to chambers 24, where the zinc is



268,301

oxidised and cooled by an air blast 26 to 500°–700° C. The oxide is drawn by a fan 30 through hood 28 and pipes 29, 32, 33, to asbestos filter bags 35, and hoppers 36. The zinc oxide is obtained substantially free from sulphur compounds.

268,299. TREATING LATEX. Naugatuck Chemical Co., Elm Street, Naugatuck, Conn., U.S.A. (Assignees of J. McGavack, 561, West 58th Street, New York.) International Convention date, March 24, 1926.

A concentrated latex of low viscosity is obtained by adding vegetable colloids such as pectin, Irish moss, or Karaya gum in the proportion of 0·4-0·7 per cent. A layer separates containing nearly all the rubber and having a concentration of 50–55 per cent. solids and of high viscosity. The viscosity is reduced by heating to about 80° C. for two hours.

268,316. ELECTROLYSIS. M. N. Lacell, Finchley Way, Finchley, London. (Assignee of A. Jessup, 12, Square Desnouettes, Paris.) International Convention date, March 26, 1926.

Fused magnesium chloride is electrolysed to obtain magnesium, and the chlorine is converted into hydrochloric acid for treating magnesia or magnesium carbonate to obtain more magnesium chloride, and also for use in the dehydration of magnesium chloride. The chlorine can be combined with hydrogen by electric or catalytic means, or it may be mixed with oxygen and passed over hot coal to obtain phosgene gas which is then treated with water or steam to form hydrochloric acid and carbon dioxide. Some of the chlorine may be used to react with milk of magnesia, to obtain a mixture of chloride and chlorate.

LATEST NOTIFICATIONS.

271,037. Process for the manufacture of a powder which can be pressed by the condensation of the amide of carbonic acid and its derivatives and formaldehyde, and for the working-up of this powder into artificial compositions. Kunstharzfabrik Dr. F. Pollak Ges. May 15, 1926.

271,039. Manufacture of photographic silver halide emulsions. I. G. Farbenindustrie Akt.-Ges. May 14, 1926.

271,042. Process for converting high-boiling hydrocarbons which have been freed from the substances soluble in liquid sulphurous acid into low-boiling hydrocarbons by means of aluminium chloride. Allgemeine Ges. für Chemische Industrie. May 12, 1926.

271,044. Process for concentrating volatile aliphatic acids. Holzverkohlungs-Industrie-Akt. Ges. May 17, 1926.

271,071. Manufacture and production of soap-like preparations. I. G. Farbenindustrie Akt.-Ges. May 15, 1926.

271,085. Manufacture of titanium compounds. Titan Co. Aktieselskabet. May 12, 1926.

271,089. Process for the production of azo-dyestuffs on weighted silk. I. G. Farbenindustrie Akt.-Ges. May 11, 1926.

271,103. Manufacture of butyric aldehyde. Consortium für Elektro-Chemische Industrie Ges. May 15, 1926.

Specifications Accepted with Date of Application

246,526. Esterification, Process of. U.S. Industrial Alcohol Co. January 26, 1925.

247,225 and 259,230. Synthetic production of ammonia. F. Uhde. February 9 and October 2, 1925.

247,957. Phenolaldehyde condensation products, Process for the production of compositions containing. Bakelite Ges. February 17, 1925.

250,265. Synthetic resins, and their manufacture. Commercial Solvents Corporation. April 1, 1925.

250,538. Polymerisation of oils. S. Cabot. April 10, 1925.

252,661. Cellulose ester materials, Treatment of. R. Clavel. May 30, 1925.

260,305. Acetaldehyde, Manufacture of. Consortium für Elektrochemische Industrie Ges. October 26, 1925.

262,447. Phosphorus acids and hydrogen, Manufacture and production of. I.G. Farbenindustrie Akt.-Ges. December 3, 1925.

263,142. 2-oxy-3-bromo-pyridine-5-arsenic acid, Process for the production of. A. Binz and C. Rath. December 21, 1925.

263,844. Alkylnaphthalenes chlorinated in the nucleus, Manufacture of. I.G. Farbenindustrie Akt.-Ges. December 29, 1925.

264,791. Acetals, Manufacture of. Consortium für Elektrochemische Industrie Ges. January 25, 1926. Addition to 257,622.

264,139. Antimony from alloys, Process of recovering. L. Meyer and M. Meyer. January 8, 1926. Addition to 241,223.

267,082. Distilling small samples of coal, Process of—and apparatus for. R. Geipert. March 4, 1926.

270,375. Cellulosic material, Treatment of. K. B. Heberlein. January 27, 1926.

270,428. Azo-dyestuffs and process of dyeing acetyl cellulose. British Dyestuffs Corporation, Ltd., J. Baddiley, and J. Hill. February 12, 1926.

270,433. Condensation products of croton aldehyde, Process for the manufacture of. W. Carpmael. (I.G. Farbenindustrie Akt.-Ges.) February 15, 1926.

270,446. Azo-dyes, Manufacture of—and process of dyeing. British Dyestuffs Corporation, Ltd., J. Baddiley, P. Chorley, and R. Brightman. February 24, 1926.

270,505. Activated carbon, Manufacture of. R. Threlfall. June 4, 1926.

270,514. Preventing evaporation and oxidation of heated electrolytes, Method of. A. L. Mond. (F. Warlimont.) June 22, 1926.

270,553. Alloys. T. D. Kelly. September 22, 1926.

270,559. Barium salts especially the carbonate, free from sulphur, Process for the manufacture of. F. Falco. October 5, 1926.

270,612. Ethyl alcohol, Process for dehydrating. Dr. W. Merck, Dr. K. Merck, L. Merck, W. Merck, and Dr. F. Merck. October 30, 1926.

250,930. Simultaneous manufacture of ammonium sulphate and bi-sulphate and of sulphur. C. Harnist. April 20, 1926.

Applications for Patents

British Dyestuffs Corporation and Wellacott, W. L. B. Dyestuffs for dyeing cellulose ethers, etc. 13,401. May 18.

Carpmael, W., and I. G. Farbenindustrie Akt.-Ges. Process for absorbing ammonia, etc., from gases. 13,272. May 17.

Castner-Kellner Alkali Co., Ltd., Polack, W. G., and Moore, J. W. Manufacture of ammonium chloride. 13,318, 13,319. May 18.

Erslev, K. Preparing aqueous solutions of benzoic acid. 13,423. May 19.

Evan, T., and Synthetic Ammonia and Nitrates, Ltd. Production of hydrocyanic acid from formamide. 13,650. May 21.

Haddan, R., and Stackable, E. R. Manufacture of dicalcium phosphate, etc. 13,488. May 19.

I. G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Splitting hydrocarbons. 13,101. May 16.

I. G. Farbenindustrie Akt.-Ges. Process for protecting wool, etc., against insects. 13,374. May 18.

I. G. Farbenindustrie Akt.-Ges. Manufacture of complex metallic compounds of *o*-hydroxyazo dyestuffs. 13,602. May 20.

I.G. Farbenindustrie Akt.-Ges. Soap preparations, etc. 13,099. May 16. (March 31, 1926.)

I. G. Farbenindustrie Akt.-Ges. Internal-combustion engines. 13,100. May 16. (Germany, May 31, 1926.)

I. G. Farbenindustrie Akt.-Ges. Manufacture of acid derivatives of the α-α^1-dimethyl γ-hydroxy-piperidine-β-carboxylic acid esters. 13,124. May 16. (Germany, May 17, 1926.)

I. G. Farbenindustrie Akt.-Ges. Manufacture of emulsifying, etc., agents. 13,273. May 17. (Germany, May 19, 1926.)

I. G. Farbenindustrie Akt.-Ges. Photographic emulsions. 13,274. May 17. (Germany, May 20, 1926.)

I. G. Farbenindustrie Akt.-Ges. Process for preserving rubber latex. 13,366. May 18. (Germany, May 28, 1926.)

I. G. Farbenindustrie Akt.-Ges. Fungicide. 13,370. May 18 (Germany, May 18, 1926.)

I. G. Farbenindustrie Akt.-Ges. Production of liquid hydrocarbons, etc., from natural ores, etc. 13,508. May 19. (April 14, 1926.)

I. G. Farbenindustrie Akt.-Ges. Production of anthraquinone derivatives. 13,509. May 19. (Germany, June 8, 1926.)

I. G. Farbenindustrie Akt.-Ges. Manufacture of valuable products from coal, etc. 13,601. May 20. (Germany, June 1, 1926.)

I. G. Farbenindustrie Akt.-Ges. Production of fertilisers. 13,700. May 21. (August 11, 1926.)

Laing, B., and Nielsen, H. Distillation of carbonaceous materials. 13,410. May 18.

Müller, K. Production of synthetic ammonia. 13,388. May 18. (Germany, May 19, 1926.)

Still, C., and Still, C. [Firm of]. Recovering sulphuric acid from acid-tar of benzol purification. 13,122. May 16. (Germany, September 20, 1926.)

Watson, J. C. Dyeing processes. 13,377. May 18.

Weitz, E. Process for separation of alkali salts. 13,626. May 20. (Germany, May 26, 1926.)

Yorkshire Dyeware and Chemical Co., Ltd. Treatment of wool. 13,402. May 18.

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

General Heavy Chemicals

ACID ACETIC, 40% TECH.—£19 per ton.

ACID BORIC, COMMERCIAL.—Crystal, £34 per ton; powder, £36 per ton.

ACID HYDROCHLORIC.—3s. 9d. to 6s. per carboy d/d, according to purity, strength, and locality.

ACID NITRIC, 80° TW.—£21 10s. to £27 per ton, makers' works, according to district and quality.

ACID SULPHURIC.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations: 140° Tw., Crude Acid, 60s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.

AMMONIA ALKALI.—£6 15s. per ton f.o.r. Special terms for contracts.

BISULPHITE OF LIME.—£7 10s. per ton, packages extra, returnable.

BLEACHING POWDER.—Spot, £9 10s. per ton d/d; Contract, £8 10s. per ton d/d, 4-ton lots.

BORAX, COMMERCIAL.—Crystals, £19 10s. to £20 per ton; granulated, £19 per ton; powder, £21 per ton. (Packed in 2-cwt. bags, carriage paid any station in Great Britain.)

CALCIUM CHLORIDE (SOLID).—£5 to £5 5s. per ton d/d carr. paid.

COPPER SULPHATE.—£25 to £25 10s. per ton.

METHYLATED SPIRIT 61 O.P.—Industrial, 2s. 5d. to 2s. 10d. per gall.; pyridinised industrial, 2s. 7d. to 3s. per gall.; mineralised, 3s. 6d. to 3s. 10d. per gall.; 64 O.P., 1d. extra in all cases; prices according to quantity.

NICKEL SULPHATE.—£38 per ton d/d.

NICKEL AMMONIA SULPHATE.—£38 per ton d/d.

POTASH CAUSTIC.—£30 to £33 per ton.

POTASSIUM BICHROMATE.—4½d. per lb.

POTASSIUM CHLORATE.—3⅞d. per lb., ex wharf, London, in cwt. kegs.

SALAMMONIAC.—£45 to £50 per ton d/d. Chloride of ammonia, £37 to £45 per ton, carr. paid.

SALT CAKE.—£3 15s. to £4 per ton d/d. In bulk.

SODA CAUSTIC, SOLID.—Spot lots delivered, £15 2s. 6d. to £18 per ton, according to strength; 20s. less for contracts.

SODA CRYSTALS.—£5 to £5 5s. per ton, ex railway depots or ports.

SODIUM ACETATE 97/98%.—£21 per ton.

SODIUM BICARBONATE.—£10 10s. per ton, carr. paid.

SODIUM BICHROMATE.—3½d. per lb.

SODIUM BISULPHITE POWDER, 60/62%.—£17 10s. per ton for home market, 1-cwt. drums included.

SODIUM CHLORATE.—2¾d. per lb.

SODIUM NITRITE, 100% BASIS.—£27 per ton d/d.

SODIUM PHOSPHATE.—£14 per ton, f.o.r. London, casks free.

SODIUM SULPHATE (GLAUBER SALTS).—£3 12s. 6d. per ton.

SODIUM SULPHIDE CONC. SOLID, 60/65.—£13 5s. per ton d/d. Contract, £13. Carr. paid.

SODIUM SULPHIDE CRYSTALS.—Spot, £8 12s. 6d. per ton d/d. Contract, £8 10s. Carr. paid.

SODIUM SULPHITE, PEA CRYSTALS.—£14 per ton f.o.r. London, 1-cwt. kegs included.

Coal Tar Products

ACID CARBOLIC CRYSTALS.—8½d. to 9d. per lb. Crude 60's, 2s. 4d. to 2s. 8d. per gall.

ACID CRESYLIC 99/100.—2s. 8d. to 2s. 9d. per gall. Steady. 97/99.—2s. 1½d. to 2s. 3d. per gall. Pale, 95%, 2s. to 2s. 2d. per gall. Dark, 1s. 9d. to 2s. 1d. per gall.

ANTHRACENE.—A quality, 2½d. to 3d. per unit. 40%, 3d. per unit.

ANTHRACENE OIL, STRAINED.—8d. to 8½d. per gall. Unstrained, 7½d. to 8d. per gall.; both according to gravity.

BENZOLE.—Crude 65's, 1s. 0¾d. to 1s. 1½d. per gall., ex works in tank wagons. Standard Motor, 1s. 9d. to 2s. 2d. per gall., ex works in tank wagons. Pure, 1s. 8d. to 2s. 6d. per gall., ex works in tank wagons.

TOLUOLE.—90%, 1s. 9d. to 2s. 0½d. per gall. Firm. Pure, 1s. 10d. to 2s. 3½d. per gall.

XYLOL.—1s. 11d. to 2s. 4d. per gall. Pure, 2s. 6d. per gall.

CREOSOTE.—Cresylic, 20/24%, 10½d. per gall. Standard specification, 6¾d. to 9d.; middle oil, 7½d. to 8d. per gall. Heavy, 8½d. to 9d. per gall. Salty, 7d. per gall. less 1½%.

NAPHTHA.—Crude, 8d. to 9d. per gall. according to quality. Solvent 90/160, 1s. 10d. to 1s. 11d. per gall. Solvent 95/160, 1s. 6d. to 1s. 7d. per gall. Solvent 90/190, 1s. 1½d. to 1s. 4d. per gall.

NAPHTHALENE CRUDE.—Drained Creosote Salts, £7 10s. per ton. Whizzed or hot pressed, £8 10s. to £9 per ton.

NAPHTHALENE.—Crystals, £11 10s. to £13 10s. per ton. Quiet. Flaked, £12 10s. per ton, according to districts.

PITCH.—Medium soft, 70s. to 80s. per ton, according to district; nominal.

PYRIDINE.—90/140, 7s. 6d. to 13s. per gall. Nominal. 90/180, 4s. 6d. to 5s. per gall. Heavy, 5s. to 8s. per gall.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated:

ACID AMIDONAPHTHOL DISULPHO (1-8-2-4).—10s. 9d. per lb.

ACID ANTHRANILIC.—6s. per lb. 100%.

ACID BENZOIC.—1s. 9d. per lb.

ACID GAMMA.—4s. 9d. per lb.

ACID H.—3s. 3d. per lb. 100% basis d/d.

ACID NAPHTHIONIC.—1s. 6d. per lb. 100% basis d/d.

ACID NEVILLE AND WINTHER.—4s. 9d. per lb. 100% basis d/d.

ACID SULPHANILIC.—9d. per lb. 100% basis d/d.

ANILINE OIL.—7d. per lb. naked at works.

ANILINE SALTS.—7d. per lb. naked at works.

BENZALDEHYDE.—2s. 3d. per lb.

BENZIDINE BASE.—3s. 3d. per lb. 100% basis d/d.

BENZOIC ACID.—1s. 8½d. per lb.

o-CRESOL 29/31° C.—4½d. per lb. Fair inquiry.

m-CRESOL 98/100%.—3s. per lb. Only limited inquiry.

p-CRESOL 32/34° C.—2s. 8¾d. per lb. Only limited inquiry.

DICHLORANILINE.—2s. 3d. per lb.

DIMETHYLANILINE.—1s. 11d. per lb. d/d. Drums extra.

DINITROBENZENE.—9d. per lb. naked at works. £75 per ton.

DINITROCHLORBENZENE.—£84 per ton d/d.

DINITROTOLUENE.—48/50° C. 8d. per lb. naked at works. 66/68° C. 9d. per lb. naked at works.

DIPHENYLAMINE.—2s. 10d. per lb. d/d.

a-NAPHTHOL.—2s. per lb. d/d.

B-NAPHTHOL.—11d. to 1s. per lb. d/d.

a-NAPHTHYLAMINE.—1s. 3d. per lb. d/d.

B-NAPHTHYLAMINE.—3s. per lb. d/d.

o-NITRANILINE.—5s. 9d. per lb.

m-NITRANILINE.—3s. per lb. d/d.

p-NITRANILINE.—1s. 9d. per lb. d/d.

NITROBENZENE.—6d. per lb. naked at works.

NITRONAPHTHALENE.—1s. 3d. per lb. d/d.

R. SALT.—2s. 3d. per lb. 100% basis d/d.

SODIUM NAPHTHIONATE.—1s. 8½d. per lb. 100% basis d/d.

o-TOLUIDINE.—7½d. to 8d. per lb. naked at works.

p-TOLUIDINE.—2s. 2d. per lb. naked at works.

m-XYLIDINE ACETATE.—2s. 11d. per lb. 100%.

Wood Distillation Products

ACETATE OF LIME.—Brown, £8 10s. to £9 5s. per ton. Grey, £15 10s. per ton. Liquor, 9d. per gall. 32° Tw.

CHARCOAL.—£6 15s. to £10 per ton, according to grade and locality.

IRON LIQUOR.—1s. 3d. per gall. 32° Tw. 1s. per gall. 24° Tw.

RED LIQUOR.—9d. to 10d. per gall. 16° Tw.

WOOD CREOSOTE.—1s. 9d. per gall. Unrefined.

WOOD NAPHTHA, MISCIBLE.—3s. 9d. to 4s. per gall., 60% O.P. Solvent, 3s. 11d. to 4s. 3d. per gall., 40% O.P.

WOOD TAR.—£4 to £5 10s. per ton and upwards, according to grade.

BROWN SUGAR OF LEAD.—£40 15s. to £41 10s. per ton.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 6½d. to 1s. 5½d. per lb., according to quality; Crimson, 1s. 4d. to 1s. 6d. per lb., according to quality.

ARSENIC SULPHIDE, YELLOW.—1s. 9d. per lb.

BARYTES.—£3 10s. to £6 15s. per ton, according to quality.

CADMIUM SULPHIDE.—2s. 6d. to 2s. 9d. per lb.

CARBON BISULPHIDE.—£20 to £25 per ton, according to quantity.

CARBON BLACK.—5½d. per lb., ex wharf.

CARBON TETRACHLORIDE.—£45 to £50 per ton, according to quantity, drums extra.

CHROMIUM OXIDE, GREEN.—1s. 1d. per lb.

DIPHENYLGUANIDINE.—3s. 9d. per lb.

INDIARUBBER SUBSTITUTES, WHITE AND DARK.—5¾d. to 6¾d. per lb.

LAMP BLACK.—£35 per ton, barrels free.

LEAD HYPOSULPHITE.—9d. per lb.

LITHOPONE, 30%.—£22 10s. per ton.

MINERAL RUBBER "RUBPRON."—£13 12s. 6d. per ton, f.o.r. London.

SULPHUR.—£9 to £11 per ton, according to quality.

SULPHUR CHLORIDE.—4d. to 7d. per lb., carboys extra.

SULPHUR PRECIP. B.P.—£47 10s. to £50 per ton.

THIOCARBAMIDE.—2s. 6d. to 2s. 9d. per lb. carriage paid.

THIOCARBANILIDE.—2s. 1d. to 2s. 3d. per lb.

VERMILION, PALE OR DEEP.—6s. to 6s. 3d. per lb.

ZINC SULPHIDE.—1s. per lb.

Pharmaceutical and Photographic Chemicals

ACID, ACETIC, PURE, 80%.—£39 per ton ex wharf London in glass containers.

ACID, ACETYL SALICYLIC.—2s. 4½d. to 2s. 6d. per lb.

ACID, BENZOIC B.P.—2s. to 2s. 3d. per lb., according to quantity. Solely ex Gum, 1s. 3d. per oz.; 500 oz. lots, 1s. per oz.

ACID, BORIC B.P.—Crystal, £41 per ton; powder, £45 per ton. Carriage paid any station in Great Britain, in ton lots.

ACID, CAMPHORIC.—19s. to 21s. per lb.

ACID, CITRIC.—1s. 6¾d. to 1s. 7¾d. per lb., less 5%. Advancing.

ACID, GALLIC.—2s. 8d. per lb. for pure crystal, in cwt. lots.

ACID, PYROGALLIC, CRYSTALS.—7s. 3d. per lb. Resublimed, 8s. 3d. per lb.

ACID, SALICYLIC, B.P.—1s. 3¼d. to 1s. 5d. per lb. Technical.—11¾d. to 1s. per lb.

ACID, TANNIC B.P.—2s. 9d. to 2s. 11d. per lb.

ACID, TARTARIC.—1s. 3¾d. per lb., less 5%. Firm market.

AMIDOL.—9s. per lb., d/d.

ACETANILIDE.—1s. 6d. to 1s. 8d. per lb. for quantities.

AMIDOPYRIN.—8s 6d. per lb.

AMMONIUM BENZOATE.—3s. 3d. to 3s. 9d. per lb., according to quantity.

AMMONIUM CARBONATE B.P.—£37 per ton. Powder, £39 per ton in 5 cwt. casks. Resublimated: lump, 1s. per lb.; powder, 1s. 3d. per lb.

ATROPINE SULPHATE.—11s. per oz. for English make.

BARBITONE.—6s. 6d. per lb.

BENZONAPHTHOL.—3s. 3d. per lb. spot.

BISMUTH CARBONATE.—9s. 9d. to 10s. per lb.

BISMUTH CITRATE.—9s. 6d. to 9s. 9d. per lb.

BISMUTH SALICYLATE.—8s. 9d. to 9s. per lb.

BISMUTH SUBNITRATE.—7s. 9d. to 8s. per lb.

BISMUTH NITRATE.—5s. 9d. to 6s. per lb.

BISMUTH OXIDE.—13s. 9d. to 14s. per lb.

BISMUTH SUBCHLORIDE.—11s. 9d. to 12s. per lb.

BISMUTH SUBGALLATE.—7s. 9d. to 8s. per lb. Extra and reduced prices for smaller and larger quantities respectively; Liquor Bismuthi B.P. in W. Qts. 1s. 1d. per lb.; 12 W. Qts. 1s. per lb.; 36 W. Qts. 11½d. per lb.

BORAX B.P.—Crystal, £24 per ton; powder, £25 per ton. Carriage paid any station in Great Britain, in ton lots.

BROMIDES.—Potassium, 1s. 10d. to 2s. per lb.; sodium, 2s. 1d. to 2s. 2d. per lb.; ammonium, 2s. 3d. to 2s. 4d. per lb., all spot.

CALCIUM LACTATE.—1s. 4d. to 1s. 5d.

CHLORAL HYDRATE.—3s. 2d. to 3s. 5d. per lb., duty paid.

CHLOROFORM.—2s. 3d. to 2s. 7½d. per lb., according to quantity.

CREOSOTE CARBONATE.—6s. per lb.

ETHER METH.—1s. 1d. to 1s. 1½d. per lb., according to sp. gr. and quantity. Ether purif. (Aether B.P., 1914), 2s. 3d. to 2s. 4d., according to quantity.

FORMALDEHYDE.—£39 per ton, in barrels ex wharf.

GUAIACOL CARBONATE.—5s. per lb.

HEXAMINE.—2s. 4d. to 2s. 6d. per lb.

HOMATROPINE HYDROBROMIDE.—30s. per oz.

HYDRASTINE HYDROCHLORIDE.—English make offered at 120s. per oz.

HYDROGEN PEROXIDE (12 VOLS.).—1s. 4d. per gallon, f.o.r. makers' works, naked.

HYDROQUINONE.—4s. per lb., in cwt. lots.

HYPOPHOSPHITES.—Calcium, 3s. 6d. per lb., for 28-lb. lots; potassium, 4s. 1d. per lb.; sodium, 4s. per lb.

IRON AMMONIUM CITRATE B.P.—2s. 1d. to 2s. 4d. per lb. Green, 2s. 4d. to 2s. 9d. per lb. U.S.P., 2s. 2d. to 2s. 5d. per lb.

IRON PERCHLORIDE.—22s. per cwt., 112 lb. lots.

MAGNESIUM CARBONATE.—Light Commercial, £31 per ton net.

MAGNESIUM OXIDE.—Light commercial, £62 10s. per ton, less 2½%; Heavy Commercial, £21 per ton, less 2½%; in quantity lower; Heavy Pure, 2s. to 2s. 3d. per lb., in 1 cwt. lots.

MENTHOL.—A.B.R. recrystallised B.P., 18s. 3d. per lb. net; Synthetic, 11s. to 12s. per lb., according to quantity; Liquid (95%), 12s. per lb.; Detached Cryst., 14s. 6d. per lb.

MERCURIALS B.P.—Up to 1 cwt. lots, Red Oxide, 7s. 6d. to 7s. 7d. per lb., levig., 7s. to 7s. 1d. per lb.; Corrosive Sublimate, Lump, 5s. 9d. to 5s. 10d. per lb., Powder, 5s. 2d. to 5s. 3d. per lb.; White Precipitate, Lump, 5s. 11d. to 6s. per lb., Powder, 6s. to 6s. 1d. per lb., Extra Fine, 6s. 1d. to 6s. 2d. per lb.; Calomel, 6s. 4d. to 6s. 5d. per lb.; Yellow Oxide, 6s. 10d. to 6s. 11d. per lb.; Persulph., B.P.C., 6s. 1d. to 6s. 2d. per lb.; Sulph. nig., 5s. 10d. to 5s. 11d. per lb. Special prices for larger quantities.

METHYL SALICYLATE.—1s. 9d. per lb.

METHYL SULPHONAL.—11s. per lb.

METOL.—11s. per lb. British make.

PARAFORMALDEHYDE.—1s. 9d. per lb. for 100% powder.

PARALDEHYDE.—1s. 4d. per lb.

PHENACETIN.—3s. per lb.

PHENAZONE.—4s. 6d. per lb.

PHENOLPHTHALEIN.—6s. to 6s. 3d. per lb.

POTASSIUM BITARTRATE 99/100% (Cream of Tartar).—100s. per cwt less 2½% for ton lots.

POTASSIUM CITRATE.—1s. 11d. to 2s. 2d. per lb.

POTASSIUM FERRICYANIDE.—1s. 9d. per lb., in cwt. lots.

POTASSIUM IODIDE.—16s. 8d. to 17s. 2d. per lb. for 1 cwt. lots.

POTASSIUM METABISULPHITE.—6d. per lb., 1-cwt. kegs included, f.o.r. London.

POTASSIUM PERMANGANATE.—B.P. crystals, 6d. per lb., spot.

QUININE SULPHATE.—2s. per oz., 1s. 8d. to 1s. 9d. for 1000 oz. lots in 100 oz. tins.

RESORCIN.—4s. per lb., spot.

SACCHARIN.—55s. per lb. Very limited inquiry.

SALOL.—2s. 4d. per lb.

SODIUM BENZOATE, B.P.—1s. 10d. to 2s. 2d. per lb.

SODIUM CITRATE, B.P.C., 1911.—1s. 8d. to 1s. 11d. per lb., B.P.C., 1923—2s. to 2s. 1d. per lb. for 1 cwt. lots. U.S.P., 1s. 11d. to 2s. 2d. per lb., according to quantity.

SODIUM FERROCYANIDE.—4d. per lb., carriage paid.

SODIUM HYPOSULPHITE, PHOTOGRAPHIC.—£15 5s. per ton, d/d consignee's station in 1-cwt. kegs.

SODIUM NITROPRUSSIDE.—16s. per lb.

SODIUM POTASSIUM TARTRATE (ROCHELLE SALT).—90s. to 95s. per cwt. Crystals, 5s. per cwt. extra.

SODIUM SALICYLATE.—Powder, 1s. 9d. to 1s. 10d. per lb. Crystal, 1s. 10d. to 1s. 11d. per lb.

SODIUM SULPHIDE, PURE RECRYSTALLISED.—10d. to 1s. 2d. per lb.

SODIUM SULPHITE, ANHYDROUS, £27 10s. to £28 10s. per ton, according to quantity; 1-cwt. kegs included.

SULPHONAL.—7s. 6d. per lb.

TARTAR EMETIC, B.P.—Crystal or powder, 2s. 1d. to 2s. 2d. per lb.

THYMOL.—Puriss., 11s. to 12s. per lb., according to quantity. Firmer. Natural, 13s. 6d. per lb. Cheaper.

Perfumery Chemicals

ACETOPHENONE.—7s. 3d. per lb.

AUBEPINE (EX ANETHOL), 10s. 6d. per lb.

AMYL ACETATE.—2s. per lb.

AMYL BUTYRATE.—5s. 3d. per lb.

AMYL SALICYLATE.—3s. per lb.

ANETHOL (M.P. 21/22° C.).—5s. 6d. per lb.

BENZYL ACETATE FROM CHLORINE-FREE BENZYL ALCOHOL.—2s. per lb.

BENZYL ALCOHOL FREE FROM CHLORINE.—2s. per lb.

BENZALDEHYDE FREE FROM CHLORINE.—2s. 6d. per lb.

BENZYL BENZOATE.—2s. 3d. per lb.

CINNAMIC ALDEHYDE NATURAL.—17s. per lb.

COUMARIN.—10s. 6d. per lb.

CITRONELLOL.—14s. 6d. per lb.

CITRAL.—8s. 3d. per lb.

ETHYL CINNAMATE.—10s. per lb.

ETHYL PHTHALATE.—2s. 9d. per lb.

EUGENOL.—9s. per lb.

GERANIOL (PALMAROSA).—17s. 6d. per lb.

GERANIOL.—6s. 6d. to 10s. per lb.

HELIOTROPINE.—4s. 9d. per lb.

ISO EUGENOL.—13s. 6d. per lb.

LINALOL.—Ex Bois de Rose, 15s. per lb. Ex Shui Oil, 10s. 6d. per lb.

LINALYL ACETATE.—Ex Bois de Rose, 18s. per lb. Ex Shui Oil, 14s. 6d. per lb.

METHYL ANTHRANILATE.—8s. 6d. per lb.

METHYL BENZOATE.—4s. 6d. per lb.

MUSK KETONE.—35s. per lb.

MUSK XYLOL.—8s. 6d. per lb.

NEROLIN.—3s. 9d. per lb.

PHENYL ETHYL ACETATE.—10s. 6d. per lb.

PHENYL ETHYL ALCOHOL.—9s. 9d. per lb.

RHODINOL.—30s. per lb.

SAFROL.—1s. 6d. per lb.

TERPINEOL.—1s. 6d. per lb.

VANILLIN.—17s. to 18s. 6d. per lb. Good demand.

Essential Oils

ALMOND OIL.—10s. 3d. per lb.

ANISE OIL.—3s. 1d. per lb.

BERGAMOT OIL.—30s. per lb.

BOURBON GERANIUM OIL.—14s. 9d. per lb.

CAMPHOR OIL.—67s. 6d. per cwt.

CANANGA OIL, JAVA.—26s. per lb.

CINNAMON OIL LEAF.—6d. per oz.

CASSIA OIL, 80/85%.—8s. 6d. per lb.

CITRONELLA OIL.—Java, 85/90%, 2s. 1d. per lb. Ceylon, pure, 1s. 10d. per lb.

CLOVE OIL.—6s. per lb.

EUCALYPTUS OIL, 70/75%.—2s. per lb.

LAVENDER OIL.—Mont Blanc, 38/40%, Esters, 21s. per lb.

LEMON OIL.—8s. 9d. per lb.

LEMONGRASS OIL.—4s. 6d. per lb

ORANGE OIL, SWEET.—10s. 6d. per lb.

OTTO OF ROSE OIL.—Anatolian, 30s. per oz. Bulgarian, 70s. per oz.

PALMA ROSA OIL.—9s. 6d. per lb.

PEPPERMINT OIL.—Wayne County, 15s. 6d. per lb. Japanese, 8s. per lb.

PETITGRAIN OIL.—7s. 9d. per lb.

SANDALWOOD OIL.—Mysore, 26s. 6d. per lb.; 90/95%, 16s. 6d. per lb.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.*

London, May 25, 1927.

THE improvement in demand for the majority of industrial chemicals has been maintained, all showing a firmer tendency with increased business. Export trade is still very slow for the East, but there are a fair number of inquiries for the Colonies.

General Chemicals

ACETONE.—Unchanged at £61 to £63 per ton according to quantity. Position firm.

ACID ACETIC.—Unchanged and demand steady.

ACID CITRIC is firm at 1s. 6¼d. to 1s. 7¼d. per lb., less 5%.

ACID FORMIC.—The demand is improving, price unchanged at £46 to £49 per ton, according to quantity.

ACID LACTIC.—Unchanged at £43 per ton for 50% by weight.

ACID OXALIC.—Demand is maintained, price unchanged at £27 10s. to £28 10s., for ton lots.

ACID TARTARIC.—The position is still firm and price is maintained at 1s. 4¼d. to 1s. 6d. per lb, according to make and quantity.

ALUMINA SULPHATE.—Still in good request, price steady at about £6 5s. for 17/18%.

AMMONIUM CHLORIDE.—Unchanged at about £19 per ton for fine white quality.

ARSENIC.—Unchanged.

BARIUM CHLORIDE is still in good demand and price unchanged at £8 10s. to £9 5s. per ton.

COPPER SULPHATE.—Unchanged.

CREAM OF TARTAR.—The position is much firmer and manufacturers are asking still higher prices. Secondhand parcels are becoming scarce and, although price remains unchanged at £99 to £102 per ton, it must advance still further.

EPSOM SALTS.—Unchanged at £5 5s. per ton. The export demand is maintained. Supplies for early delivery are short.

FORMALDEHYDE.—The demand has improved and price remains firm at £41 per ton.

LEAD ACETATE.—Price unchanged at £44 per ton for white, and £42 per ton for brown. Lead is still wea and de mand poor.

LEAD NITRATE.—Unchanged at £38 to £39 per ton.

METHYL ACETONE is firm at £60 per ton.

METHYL ALCOHOL.—Unchanged.

POTASSIUM CHLORATE is unchanged at about 3¼d. per lb.

POTASSIUM PERMANGANATE.—The position is still firm. Needle crystals B.P. are 8d. per lb.

POTASSIUM PRUSSIATE continues firm and in good demand. Price unchanged at 7¼d. to 7½d. per lb.

SODIUM ACETATE.—The improvement in demand is maintained. Price unchanged at £18 to £19 per ton.

SODIUM BICHROMATE.—The position is firmer although the price still remains at 3¼d. per lb.

SODIUM HYPOSULPHITE is unchanged.

SODIUM NITRITE is still very firm and in good demand at £19 10s. to £20 10s. per ton.

SODIUM PRUSSIATE is in good request at 4½d. per lb.

SODIUM SULPHIDE is unchanged.

ZINC SULPHATE is unchanged.

Coal Tar Products

The market for coal tar products is rather quiet, and there is little change to report in prices since last week.

90's BENZOL is quoted at 1s. 6¼d. per gallon, on rails, and the motor quality is worth about 1s. 5¼d. per gallon.

PURE BENZOL is worth about 1s. 10d. per gallon, on rails.

CREOSOTE OIL is unchanged, at 7d. to 7¼d. per gallon, on rails, in the North, while the price in London is from 8¼d. to 8¾d. per gallon.

CRESYLIC ACID remains very firm, the pale quality, 97/99%, being quoted at 2s. 2d. per gallon, on rails, while the dark quality, 95/97%, is worth about 2s. 1d. per gallon.

SOLVENT NAPHTHA is worth about 1s. 2d. per gallon, on rails.

HEAVY NAPHTHA is quoted at 1s. 2d. per gallon, on rails.

NAPHTHALENES are unchanged, the 76/78 quality being quoted at £8 5s. to £8 15s. per ton, while the 74/76 quality is worth £7 10s. to £8 per ton.

COAL TAR PITCH is unchanged and little interest is shown. To-day's value is 70s. to 75s. per ton, f.o.b. U.K. ports.

Latest Oil Prices

LONDON, May 25.—LINSEED OIL firm and 5s. to 7s. 6d. higher. Spot, ex mill, £33 10s.; May, £32 7s. 6d.; June-August, £33 2s. 6d.; September-December, £33 17s. 6d. RAPE OIL inactive. Crude extracted, £44 10s.; technical refined, £46 10s.; naked, ex wharf. COTTON OIL slow. Refined common edible, £42; Egyptian, crude, £36; deodorized, £44; naked. TURPENTINE quiet and unchanged. American, spot and June, 44s.; July-December, 45s. 6d. per cwt.

HULL, May 25.—OILS.—LINSEED OIL.—Naked, spot and May, £34 5s.; June-August, £34 10s.; September-December, £34 15s. COTTONSEED OIL.—Naked, Bombay, crude, £34 10s.; Egyptian, crude, £35 15s.; edible, refined, £39 10s.; technical, £38 5s.; deodorised, £41 10s. PALM KERNEL OIL.—Crushed, naked, 5½ per cent., £38. GROUND NUT OIL.—Crushed extracted, £45; deodorised, £49. SOYA OIL.—Extracted and crushed, £34 10s.; deodorised, £38. RAPE OIL.—Crude-extracted, £44; refined, £46 per ton, net, cash terms, ex mill. CASTOR OIL and COD OIL unchanged.

Nitrogen Products

Export.—During the last week, on account of the usual falling off in the home demand, greater supplies have been available for export, and the price has receded to £10 2s. 6d.-£10 5s. per ton, f.o.b. U.K. port, in single bags. The Continent still continues to purchase for prompt shipment. In the Far East demand continues, and stocks have been reduced considerably. The American position remains unchanged, and producers are hard put to it to deliver prompt requirements.

Home.—The home demand continued well into May, but the middle of the month found a large falling off in orders from several districts. It is reported that British producers will continue the present prices for June delivery, and introduce the new price scale on July 1. Apparently, producers are not anxious to commit themselves to a price scale until they are able to survey results for the present season.

Nitrate of Soda.—The nitrate position remains unchanged. The sales for this season's consumption are very small, and stocks in Chile continue to augment. Producers are hoping that improvements in the methods of extracting nitrate will lower production costs so extensively that a reduced price scale can be operated profitably. It remains to be seen whether this will be correct. Sales have been made at 16s. per metric quintal, but estimates vary as to the quantity changing hands at this figure. Offers at £9 15s., c.i.f. chief continental port, have found few takers. The coming year will witness strenuous competition in the fertiliser world and considerable effort on the part of nitrate producers to place their industry on a satisfactory economic basis.

Merchandise Marks: Uncompounded Drugs Exempt

THE Board of Trade have given notice of their intention to exempt uncompounded drugs from the requirement that imported goods bearing a British name or trade mark must also bear an indication of origin. This exemption will not extend to proprietary articles, or to articles sold in their original packing. Any communication on the subject should be addressed, within fourteen days of the date of this notice (May 25), to The Secretary, Board of Trade, Great George Street, Westminster, London, S.W.1.

DR. M. O. FORSTER, F.R.S., has returned to England from India on holiday.

THE STANDARD OIL CO. is constructing at Batum some oil refining works capable of refining over 150,000 tons of crude oil annually.

ZANZIBAR, after enjoying for years a virtual monopoly of the cloves market, has now suffered a setback, owing to the use of synthetic substitutes. Notwithstanding the fall in price, cloves remain fairly profitable in the island.

FRENCH CUSTOMS TARIFFS are the subject of a bill just introduced by the French Government. Heavy increases of tariff are proposed, chemical products being among those involved in the proposed changes. In the dyestuffs group the suggested new duties are particularly heavy, that on derivatives of pyrazolone, for example, being increased from 510 to 1,600 fr. per 100 kg., while several other colouring matters are subject to even higher duties, ranging up to 2,400 fr. per 100 kg. Among many other increases are the following (per 100 kg.): nitrobenzene, from 79 to 187 fr.; resorcin, from 300 to 700 fr.; cellulose acetate, from 601 to 1,000 fr.; aniline and its salts, from 127·5 to 230 fr.; lactate of lime, from 15 to 200 fr.; iodoform, from 2,100 to 3,200 fr.; sodium metal, 125 fr. (previously nil); sodium cyanide, from 50 to 150 fr.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.*

Glasgow, May 25, 1927.

BUSINESS in the heavy chemical market has been fairly quiet during the past week, possibly on account of the local holiday. Prices both for home and continental products are on about the same level as last reported.

Industrial Chemicals

ACID ACETIC.—98/100%, £55 to £67 per ton, according to quantity and packing; c.i.f. U.K. ports; 80% pure, £37 10s. per ton, ex wharf; 80% technical, £37 10s. per ton, ex wharf.

ACID BORIC.—Crystal, granulated or small flakes, £34 per ton; powder, £36 per ton, packed in bags, carriage paid U.K. stations.

ACID CARBOLIC, ICE CRYSTALS.—Now quoted 8¾d. per lb., f.o.b. U.K. ports. In little demand.

ACID CITRIC, B.P. CRYSTALS.—Spot material of British manufacture on offer at 1s. 6½d. per lb., less 5%, ex store. Continental quoted 1s. 6⅞d. per lb., ex wharf.

ACID HYDROCHLORIC.—Usual steady demand. Arsenical quality, 4s. 9d. per carboy. Dearsenicated quality, 6s. 3d. per carboy, ex works.

ACID NITRIC, 80°.—Quoted £23 5s. per ton, ex station, full truck loads.

ACID OXALIC.—Quoted 3d. per lb., ex store, spot delivery. On offer from the Continent at about 2⅞d. per lb., ex wharf.

ACID SULPHURIC, 144°.—£3 12s. 6d. per ton; 168°, £7 per ton, ex works, full truck loads. Dearsenicated quality, 20s. per ton more.

ACID TARTARIC, B.P. CRYSTALS.—Now on offer at 1s. 4¼d. per lb., ex wharf.

ALUMINA SULPHATE, 17/18%, IRON FREE.—Spot material quoted £5 12s. 6d. per ton, ex store. On offer for early delivery at £5 5s. per ton, c.i.f. U.K. ports.

ALUM POTASH.—Lump quality quoted £8 per ton, c.i.f. U.K. ports. Crystal powder, 5s. per ton less. Lump on spot, £9 per ton. Crystal powder, £8 10s. per ton, ex store.

AMMONIA ANHYDROUS.—Spot supplies now available at about 9½d. per lb., ex store, containers extra and returnable.

AMMONIA CARBONATE.—Lump, £37 per ton; powdered, £39 per ton, packed in 5 cwt. casks, delivered or f.o.b. U.K. ports.

AMMONIA LIQUID, 880.—Unchanged at about 2½d. to 3d. per lb., delivered according to quantity.

AMMONIA MURIATE.—Grey galvanisers' crystals of English manufacture unchanged at about £23 to £24 per ton, ex station. Continental on offer at about £20 per ton, c.i.f. U.K. ports. Fine white crystals quoted £18 per ton, c.i.f. U.K. ports.

ARSENIC.—White powdered Cornish now on offer at £18 per ton, c.i.f. U.K. ports, prompt despatch from mines. Spot material available at £19 per ton, ex store.

BARIUM CARBONATE, 98/100%.—White powdered quality quoted £6 15s. per ton, c.i.f. U.K. ports.

BARIUM CHLORIDE, 98/100%.—Large white crystals on offer from the Continent at £7 12s. 6d. per ton, c.i.f. U.K. ports, packed in casks. Bags, 5s. per ton less. Spot material quoted £9 5s. per ton, ex store.

BARYTES.—English material unchanged at £5 5s. per ton, ex works. Continental quoted £5 per ton, c.i.f. U.K. ports.

BLEACHING POWDER.—Contract price to consumers, £8 per ton, ex station, minimum 4 ton lots. Spot material, 10s. per ton extra. Continental now quoted £7 10s. per ton, c.i.f. U.K. ports.

BORAX.—Granulated, £19 10s. per ton; crystals, £20 per ton; powder, £21 per ton, carriage paid U.K. ports.

CALCIUM CHLORIDE.—English manufacturers' price unchanged at £5 to £5 5s. per ton, ex station. Continental on offer at about £3 15s. per ton, c.i.f. U.K. ports.

COPPERAS, GREEN.—Unchanged at about £3 10s. per ton, f.o.r. works, or £4 12s. 6d. per ton, f.o.b. U.K. ports for export.

COPPER SULPHATE.—Continental material quoted £24 15s. per ton, ex wharf. British material on offer at about the same price f.o.b. U.K. ports.

FORMALDEHYDE, 40%.—Unchanged at £38 per ton, c.i.f. U.K. ports. Spot material quoted £39 5s. per ton, ex store.

GLAUBER SALTS.—English material unchanged at £4 per ton, ex store or station. Continental now £2 17s. 6d. per ton, c.i.f. U.K. ports.

LEAD, RED.—Imported material quoted £33 per ton, ex store.

LEAD, WHITE.—About £33 5s. per ton, ex store.

LEAD ACETATE.—White crystals quoted £42 15s. per ton, c.i.f. U.K. ports; brown, about £40 5s. per ton, c.i.f. U.K. ports; white crystals on spot quoted £44 5s. per ton, ex store.

MAGNESITE, GROUND CALCINED.—Quoted £8 10s. per ton, ex store, in moderate demand.

MAGNESIUM CHLORIDE.—Quoted £6 0s. 6d. per ton, c.i.f. U.K. ports.

POTASH CAUSTIC 88/92%.—Solid quality quoted £28 15s. per ton, c.i.f. U.K. ports, minimum 15 ton lots. Under 15 ton lots, £29 10s. per ton. Liquid, £15 per ton, minimum 15 ton lots. Under 15 ton lots, £15 7s. 6d. per ton, c.i.f. U.K. ports.

POTASSIUM BICHROMATE.—Unchanged at 4½d. per lb., delivered.

POTASSIUM CARBONATE 96/98%.—Quoted £27 5s. per ton, ex wharf, early shipment. Spot material on offer at about £28 10s. per ton, ex store.

POTASSIUM CHLORATE.—Powdered quality on offer £24 5s. per ton, c.i.f. U.K. ports. Spot material, £2 per ton extra.

POTASSIUM NITRATE.—On offer from the Continent at about £20 15s. per ton, c.i.f. U.K. ports. Spot material now quoted £22 per ton, ex store.

POTASSIUM PERMANGANATE B.P. CRYSTALS.—Quoted 6½d. per lb.; ex store, spot delivery.

POTASSIUM PRUSSIATE, YELLOW.—In good demand and price unchanged at about 7½d. per lb., ex store, spot delivery. Offered from the Continent at 7¼d. per lb., c.i.f. U.K. ports.

SODA CAUSTIC.—Powder, 98/99%, £19 7s. 6d. per ton; 76/77%, £15 10s. per ton; 70/72%, £14 10s. per ton, carriage paid station, minimum 4 ton lots on contract. Spot material, 10s. per ton extra.

SODIUM ACETATE.—English material quoted £22 5s. per ton, ex store. Some cheap Continental lots on offer at about £18 5s. per ton, c.i.f. U.K. ports.

SODIUM BICARBONATE.—Refined recrystallised quality, £10 10s. per ton, ex quay or station. M.W. quality, 30s. per ton less.

SODIUM BICHROMATE.—Quoted 3¼d. per lb., delivered buyers' works.

SODIUM CARBONATE (SODA CRYSTALS).—£5 to £5 5s. per ton, ex quay or station; powder or pea quality, £1 7s. 6d. per ton more; alkali, 58%, £8 12s. 3d. per ton, ex quay or station.

SODIUM HYPOSULPHITE.—Large crystals of English manufacture quoted £9 10s. per ton, ex store, minimum 4 ton lots. Continental on offer at about £8 2s. 6d. per ton, ex wharf, prompt shipment. Pea crystals of British manufacture quoted £15 5s. per ton, ex station, 4 ton lots.

SODIUM NITRATE.—Ordinary quality quoted £13 per ton, ex store. Refined quality, 5s. per ton extra.

SODIUM NITRITE, 100%.—Quoted £20 per ton, ex store, spot delivery.

SODIUM PRUSSIATE, YELLOW.—Offered for prompt shipment from the Continent at 4¼d. per lb., ex wharf. Spot material on offer at 4½d. per lb., ex store.

SODIUM SULPHATE (SALTCAKE).—Price for home consumption, £3 7s. 6d. per ton, ex works.

SODIUM SULPHIDE, 60/65%.—Solid, £11 10s. per ton; broken, £12 10s. per ton; cakes, £12 10s. per ton; flake, £14 5s. per ton; crystals, 31/34%, £7 15s. to £8 10s. per ton, according to quality, delivered buyers' works, minimum 4 ton lots on contract. Prices for spot delivery are 5s. and 2s. 6d. per ton extra for solid and crystals respectively. Offered from the Continent at about £9 7s. 6d. per ton, c.i.f. U.K. ports; broken, 15s. per ton extra.

SULPHUR.—Flowers, £12 10s. per ton; roll, £11 10s. per ton; rock, £11 10s. per ton; floristella, £10 10s. per ton; ground American, £9 5s. per ton, ex store. Prices nominal.

ZINC CHLORIDE.—British material, 98/100%, quoted £24 15s. per ton, f.o.b. U.K. ports; 98/100%, solid, on offer from the Continent at about £21 15s. per ton, c.i.f. U.K. ports; powdered, 20s. per ton extra.

ZINC SULPHATE.—Continental material on offer at about £10 10s. per ton, ex wharf.

NOTE.—The above prices are for bulk business and are not to be taken as applicable to small parcels.

Arsenic Production in Canada in 1926

ARSENIC production from Canadian ores amounted to 5,074,677 lb., including sales of white arsenic amounting to 3,984,217 lb., and the recoverable arsenic contained in export shipments of concentrates and residues, amounting to a further 1,090,460 lb. of white arsenic. The value of the total Canadian production was $146,811 in 1926, compared with $130,302 for 3,434,137 lb. sold in 1925. The average price of arsenic on the New York market in 1926 was 3·5 cents per lb., as against 4·66 cents in 1925. Imports of arsenical products in 1926 amounted to 218,464 lb. (value $24,097), compared with 526,891 lb. in 1925, valued at $34,988. The quantity exported (in the form of white arsenic in arsenical concentrates and arsenic not otherwise particularised) in 1925 was 1,367 tons, valued at $108,338, and in 1926 1,672 tons, valued at $108,120.

Manchester Chemical Market

(From Our Own Correspondent.)

Manchester, May 26, 1927.

General steadiness in the market for heavy chemicals is still a feature of trade conditions in this centre, and only in a comparatively few instances is there anything resembling weakness. On the other hand, the volume of trade leaves plenty of room for improvement, and only a moderate business can be reported this week, new commitments on the part of buyers being, for the most part, for prompt or fairly near delivery. Export demand is also rather quiet.

Heavy Chemicals

A quietly steady trade in bichromate of soda is being put through, with current values for this material in the neighbourhood of 3d. per lb. Sulphide of sodium is rather slow, but prices are about where they have been during the last few weeks, 60-65 per cent. concentrated solid being quoted at about £11 per ton, and the ordinary commercial material at from £8 5s. to £8 10s. Bicarbonate of soda is fully maintained at £10 10s. per ton, and a moderate business is reported. Caustic soda still meets with a fair demand both on home and export account, and prices are firm at from £14 10s. per ton for 60 per cent. to £16 10s. for 76 per cent. quality. Hyposulphite of soda is in moderate request and values are steady at £15 5s. per ton for photographic and about £9 7s. 6d. for commercial material. Bleaching powder is unchanged in price at £8 per ton and a fair trade in this is reported. Phosphate of soda is rather slow and quotations are on the easy side at about £12 7s. 6d. per ton. Prussiate of soda moves off in relatively limited quantities, but quotations continue to hover round 4¼d. per lb. Saltcake meets with a quiet demand at round £3 12s. 6d. per ton. Nitrite of soda is on offer at about last week's level of £19 per ton, and a moderate trade has been done. Alkali is firm and in quietly steady request at £6 15s. per ton. Chlorate of soda is easy and comparatively little buying interest has been shown in it; from 2¾d. to 3d. per lb. is being quoted here this week. Glauber salts are a slow section, but prices are about maintained at £3 5s. per ton.

Yellow prussiate of potash seems to be somewhat steadier again, with quotations at round 7¼d. per lb.; only a modest inquiry for this has been met with, however. Permanganate of potash is held at about 5¼d. per lb. for the commercial quality, and 6½d. for B.P., with the demand on quiet lines. Caustic potash is in moderate request and values are steady at £29 to £30 10s. per ton, according to quantity. Carbonate of potash is well maintained and about £27 5s. per ton is now being asked, with the demand on a fair scale. Chlorate of potash is in comparatively limited demand at 3½d. per lb. Bichromate of potash is a rather quiet section with to-day's prices ranging from 4d. to 4¼d. per lb.

There is still only a moderate demand reported here for arsenic, but values show no further change, about £16 5s. per ton still being asked at the mines for white powdered Cornish makes. Sulphate of copper keeps steady and up to £25 10s. per ton is being quoted, a quietly steady volume of inquiry being met with. The tendency of lead nitrate is still easy at about £38 per ton and the movement of this material is slow. Acetate of lead is also on the quiet side, although prices are about unchanged at £41 per ton for brown and £43 10s. for white material. A moderate demand for acetate of lime is reported at about £8 5s. per ton for the brown and £15 7s. 6d. for the grey quality.

Acids and Tar Products

In the case of oxalic acid the demand is on a fair scale with offers at about 3d. per lb. Both tartaric and citric acids, although in neither case has there been much evidence of buying activity during the past week, continue their firm tendency, about 1s. 3¾d. and 1s. 6¼d. per lb., respectively, being quoted here this week. Acetic acid is in moderate request and prices are well held at about £37 per ton for the 80 per cent. commercial quality and £66 10s. for the glacial.

There are no striking features in the tar products market just now. Inquiry for pitch is very slow, but values seem fairly steady at about £3 15s. per ton. Solvent naphtha continues to display marked weakness, with about 1s. 2½d. per gallon now being quoted in connection with the very limited business that is passing. Creosote oil, however, keeps steady and meets with a fair amount of inquiry at about 7¼d. per gallon. Carbolic acid is in quiet demand at 8½d. per lb. for crystals and 2s. 7d. per gallon for crude material.

The Electrical "Blue Book"

The 1927 edition of that useful work of reference, the *Electrical Trades Directory and Handbook*, has now been published by Ernest Benn, Ltd., at the usual price of 25s. No pains have been spared to make the alphabetical and classified lists of firms and individuals as complete and accurate as possible, and similar care has been devoted to the special sections containing amplified information regarding scientific and technical societies, universities, colleges and schools, British and foreign Government departments, patents and trade marks, and machinery testing rules, and the many useful tables relating to wires, cables, dielectrics and other material used in electrical work. The details of British, foreign, and international telegraph and telephone facilities, and the import duties imposed upon electrical machinery apparatus and material in the British possessions and foreign countries, have also been carefully revised, while the Government regulations relating to the supply and use of electricity have also been carefully checked, and necessary modifications have been made in the Digest of the Law of Electric Lighting, Power and Traction to bring it into line with the position created by the passing of the 1926 Electricity (Supply) Act.

There are, as usual, alphabetical and classified lists of electrical firms and persons not only in the United Kingdom, but also in the British Dominions and Colonies, on the Continent of Europe, in Asiatic and South American States, and in the United States of America.

The pages of information, apart from advertisements, number 1,414, and as there are already indications of a revival of trade in the electrical industry which should also make considerable strides in the next few years as the result of the expansion expected as the result of the application of the Government's national scheme, further expansion of the book may also be predicted.

An improvement which makes the volume more convenient in use is the substitution of projecting celluloid tabs for the thumb-holes previously used to indicate the beginning of the various sections.

"Indurite" Moulding Powders and Products

At a recent meeting of the Edinburgh Royal Society a paper was presented on "Indurite," which resulted in some inquiries as to the nature of the product and the interests with which it was associated. We have since received from the North British Moulding Co., Ltd., of Edinburgh, some particulars of the product and some interesting samples. The company, although chiefly concerned with the marketing of "Indurite" powders, are closely associated with an organisation fully equipped to handle the manufacture of complete moulded articles. "Indurite" is a patented moulding powder of the phenol-formaldehyde condensation product type, and is said to be the result of much experimental work and research over a period of years. It is, we understand, an entirely British product. The nature of the material enables it to be used for a great variety of articles such as electrical, telephone, and wireless accessories, motor-car, surgical and dental fillings, door furniture, office requisites, brush backs, handles, ashtrays, buttons, and various other articles. The samples forwarded to us, which include a slow-motion dial and ashtrays, have a very clean and neat appearance, and in some cases have a mottled effect which adds to its attractiveness. Particulars are given of its electrical resistance, mechanical strength, and heat resistance. Generally it is said to be unaffected by climate, water, steam, oils, and ordinary solvents. It is supplied in 17 colours, and mottled effects can be produced where desired.

Gas masks had to be worn by Hull firemen at a fire which broke out at the chemical works of Alfred Smith, Ltd., Oak Road, Newland, on Friday, May 20. The outbreak occurred on the ground floor which contained ten tons of sulphur, and the flames travelled up the elevator to the second and third floors, when grinding machinery became involved. Sulphurous fumes caused the firemen difficulty, but the outbreak was quickly brought under control with the aid of two fire engines and a trailer pump.

Company News

BRITISH CELANESE, LTD.—The directors announce that the net profit, subject to depreciation, for the book month of April (five weeks) amounted to £68,595.

CROSFIELD'S OIL AND CAKE CO.—The net profits for the past year totalled £27,000. A final dividend of 5 per cent. has been declared, making 15 per cent. for the year.

CHLORIDE ELECTRICAL STORAGE.—A dividend of 5 per cent. and a bonus of 2s. per share, free of tax, has been declared on the ordinary shares, making 20 per cent. for the year. The sum of £50,000 has been placed to reserve, £25,000 to depreciation reserve, £10,000 for the benefit of employees, and £47,352 carried forward.

A. B. FLEMING AND CO.—The report for the year ended April 30 last, states that the amount at the credit of profit and loss account is £52,161, which includes £15,529 balance from last year. The directors recommend placing to general reserve account £18,000, and the payment of a dividend of 15 per cent., less income tax (of which 5 per cent. actual was paid to account on November 20 last), leaving to carry forward £16,161.

BELL'S UNITED ASBESTOS CO., LTD.—An extraordinary general meeting of the company will be held at Cannon Street Hotel, London, at 2 p.m., on May 30, when resolutions will be submitted providing for an increase in the capital of the company from £400,000, divided into 60,000 preference shares of £1 each and 340,000 ordinary shares of £1 each, to £750,000 by the creation of 190,000 new preference shares of £1 each and 160,000 new ordinary shares of £1 each.

CELANESE CORPORATION OF AMERICA.—This company, formerly known as the American Cellulose and Chemical Manufacturing Co., has declared a dividend of 7 per cent. on the 7 per cent. cumulative first participating preferred stock, 3½ per cent. of which represents the current dividend for the six months period from January 1, 1927, to June 13, 1927, and 3½ per cent. of which represents a dividend on account of arrears for the six months period from January 1, 1925, to June 30, 1925, payable June 30, 1927.

Tariff Change

POLAND.—An Order of September last providing for the refund of import duty on imported electrodes for the manufacture of calcium carbide, calcium cyanamide and ammonium nitrate for export from Poland has been cancelled, and a further Order provides that the import duty on such electrodes and on electrodes for the manufacture of ferro silicon is to be levied from April 21 to September 30, 1927, at 10 per cent. of the normal rates, subject to the special permit being obtained from the Ministry of Finance.

W. J. Bush and Co.'s Successful Year

THE annual general meeting of W. J. Bush and Co., Ltd., was held on Wednesday, in London, Mr. J. M. Bush (chairman and managing director) presiding. He stated that in view of the unsettled conditions which prevailed during last year, the figures he had to present could be regarded as satisfactory. As a set-off to these adverse conditions they had the benefit of more economic production through the use of their remodelled plant. The outlook indicated that foreign competition in fine chemicals would continue, and that profits in this field of work were not likely to be commensurate with the knowledge and skill required. Although this severe competition confronted them, it must be borne in mind that the manufacture of fine chemicals was only one section of their business. Its main foundation was based on the manufacture of flavouring essences and the distillation of, and trading in, essential oils. In this direction it was gratifying to see an upward tendency in their sales, notwithstanding the decline in turnover in some foreign markets. To the net profit for the year of £57,880 they had to add the amount of £53,544 brought forward, placing at their disposal a total of £111,424. The directors made the following recommendations: The payment of a final dividend of 7 per cent. on the ordinary shares, making, with the interim dividend already paid, 10 per cent. for the year, requiring £25,000, the increase of the general reserve fund by £20,000, and the carrying forward of the balance of £60,174. The report and accounts were adopted.

New Chemical Trade Marks

Applications for Registration

This list has been specially compiled for us by Gee & Co., Patent and Trade Mark Agents, Staple House, 51 and 52, Chancery Lane, London, W.C.2, from whom further information may be obtained, and to whom we have arranged to refer any inquiries relating to Patents, Trade Marks and Designs.

Opposition to the Registration of the following Trade Marks can be lodged up to June 18, 1927.

"PERMASEAL."

478,134. Class 1. Paints, varnishes, enamels, dry colours, distempers, japans, lacquers, anti-corrosives and anti-fouling compositions and anti-corrosives oils. Hadfield's (Merton), Ltd., Western Road, Mitcham, Surrey; enamel manufacturers. March 25, 1927.

"EMAILLITE."

479,368. Class 1. Chemical substances used in manufactures, photography or philosophical research and anti-corrosives. Titanine-Emaillite, Ltd., Empire House, 175, Piccadilly, London, W 1; manufacturers. April 1, 1927.

"MOLDICIDE."

479,258. Class 2. Chemical substances used for agricultural, horticultural, veterinary, and sanitary purposes. Borax Consolidated, Ltd., 16, Eastcheap, London, E.C.3; manufacturers of borax, boracic acid, and boron products. March 29, 1927. (To be Associated. Sect. 24.)

"ALLACTIS."

479,352. Class 3. Chemical substances prepared for use in medicine and pharmacy. Oppenheimer, Son and Co., Ltd., 179, Queen Victoria Street, London, E.C.4; manufacturing chemists and export merchants. March 31, 1927. (To be Associated. Sect. 24.)

"BITAR."

469,268. Pitch or bitumen, tar, asphaltum, dyes, turpentine, tar derivatives, oils and spirits, and raw or partly prepared paving material and unwrought and partly wrought stone. R. S. Clare and Co., Ltd., 8, Stanhope Street, Liverpool, Lancashire; manufacturers. April 22, 1926. (To be Associated. Sect. 24.) (By Consent.)

Opposition to the Registration of the following Trade Mark can be lodged up to June 25, 1927.

"MONEX."

474,558. Class 1. Tetramethyl thiurannono sulphide, being a chemical substance for use in accelerating the vulcanisation of india-rubber. The Naugatuck Chemical Co. (a corporation organised and existing under the laws of the State of Connecticut, U.S.A.), 1790, Broadway, City, County and State of New York, U.S.A.; manufacturers. November 4, 1926.

Chemical Trade Inquiries

The following inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

CREOSOTE.—The Director General, India Store Department, Branch No. 10, Belvedere Road, Lambeth, London, S.E.1, is inviting tenders for 2,500 tons of creosote to B.E.S.A. Specification No. 144. Tenders are due on June 14. Specifications and forms of tender may be obtained from the address given, at a fee of 5s. per set, which is not returnable.

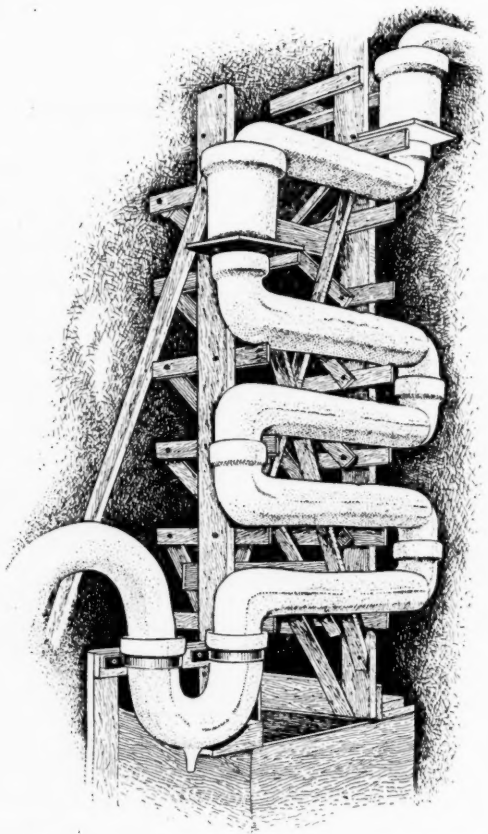
IRON ORE, SMELTED ALUMINIUM AND NICKEL.—A firm in Vienna desires to secure the representation of British manufacturers or exporters. (Reference No. 528.)

CHEMICAL PRODUCTS, DYES, PAINTS, AND VARNISHES.—An agent in Düren (Rhineland, Germany) desires to represent a British manufacturer. (Reference No. 530.)

ACIDS, DYES, SULPHATE OF AMMONIA, ETC.—British firm in Amsterdam, wide tropical experience, desires to obtain the agency of British manufacturers. (Reference No. 532.)

NON-FERROUS METALS AND FERRO ALLOYS.—An Englishman resident in Naples, with considerable engineering experience, is desirous of obtaining a general agency for Italy of first-class British firms. (Reference No. 536.)

The "VITREOSIL"



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System of HYDROCHLORIC ACID ABSORPTION

THESE VESSELS set up Vertically one above the other can be thoroughly Water Cooled.

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ABC Code, 5th & 6th Editions, & Bentley's used

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

County Court Judgments

[NOTE.—The publication of extracts from the "Registry of County Court Judgments" does not imply inability to pay on the part of the persons named. Many of the judgments may have been settled between the parties or paid. Registered judgments are not necessarily for debts. They may be for damages or otherwise, and the result of bona-fide contested actions. But the Registry makes no distinction of the cases. Judgments are not returned to the Registry if satisfied in the Court books within twenty-one days. When a debtor has made arrangements with his creditors we do not report subsequent County Court judgments against him.]

SENIOR CROZIER AND CO., LTD., Union Works, Union Street, Stratford, chemical manufacturers. (C.C., 28/5/27.) £31 19s. 6d. April 12.

TAYLOR, J. AND J., AND CO., 5/7, Seddon Street, Liverpool, oil and colour manufacturers. (C.C., 28/5/27.) £10 19s. 6d. March 21.

Mortgages and Charges

*[NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.]*

ALLIANCE (MANCHESTER), LTD., chemical dealers. (M., 28/5/27.) Registered May 10, debenture to bank; general charge. *Nil. March 25, 1927.

JACKSON (THOMAS S.) AND SONS, LTD., Mitcham, varnish manufacturers. (M., 28/5/27.) Registered May 12, £1,500 (not ex.) sub mort., to bank; charged on Corner Wharf, Olmar Street, Camberwell. *£2,500. February 24, 1926.

McCLURE YOUNG AND CO., LTD. (late BUDGE LTD.), London, S.W., disinfectant manufacturers (M., 28/5/27.) Registered May 9, £1,000 debentures (filed under sec. 93 (3) of the Companies (Consolidation) Act, 1908), present issue £300; general charge. *Nil. December 31, 1926.

MALEHURST BARYTES CO., LTD., near Shrewsbury. (M., 28/5/27.) Registered May 16, £1,000 debentures, part of £10,000; general charge. *£6,000. July 14, 1926.

MORRIS AND WEST, LTD., Liverpool, paint manufacturers. (M., 28/5/27.) Registered May 12, charge to bank; charged on 46/54, Claughton Road, Birkenhead.

Satisfaction

LEVER BROTHERS, LTD., London, E.C., soap manufacturers. (M.S., 28/5/27.) Satisfaction registered May 13, £32,810, part of amount registered April 13, 1921.

Receivership

RANSOME MACHINERY CO. (1920), LTD. (R., 28/5/27.) A receiver and manager has been appointed by the Court, and is continuing to carry on trading until intended scheme for reconstruction of the company is prepared.

London Gazette, &c.

Company Winding Up Voluntarily

GAS POWER AND BY-PRODUCTS CO., LTD. (C.W.U.V., 28/5/27.) By special resolution passed May 2, confirmed May 18, R. H. Ballantine, chartered accountant, Glasgow, appointed liquidator. Meeting of creditors at the office of the liquidator, 116, Hope Street, Glasgow, on Friday, June 3, at 12 noon. All creditors have been or will be paid in full.

Notice of Intended Dividend

BRIDGE, Edwin William Jones, 133-139, Finsbury Pavement, London, American and Continental drug importer. Last day for receiving proofs, June 17. Trustee, C. N. Moyle, 69, Moorgate, E.C.2.

Partnerships Dissolved

HIGGINBOTTOM AND CO. (Harry WORTHINGTON, Henry Clarke PICKERING, Henry BLACK, and Charles SHARPLES), chemical and metal merchants, 21, Spring Gardens, Manchester, by mutual consent as from January 1, 1927, so far as concerns C. Sharples. Debts received and paid by H. Worthington, H. C. Pickering, and H. Black, who will continue the business.

NICOBAR CO. (Richard Edwin NICHOLSON, David Thomas BARDSLEY, and George COPELAND), disinfectant apparatus manufacturers, Halifax, Yorks, by mutual consent as from March 31, 1927. Debts received and paid by D. T. Bardsley and G. Copeland, who will continue the business.

New Companies Registered

BRYTE, LTD., 8, Red Lion Square, London, W.C.1. Registered May 21. Nom. capital, £500 in 400 preference shares of £1 each and 2,000 ordinary shares of 1s. each. To acquire the business of a manufacturing chemist now carried on by G. Mellor at 99, Lynton Road, Acton, London, W., as the "Bryte Polish Co." Directors: G. Mellor, T. Hadley.

DUDLEY CHEMICAL CO., LTD. Registered May 20. Nom. capital, £2,500 in 2,000 7½ per cent. cumulative preference shares of £1 each, and 10,000 ordinary shares of 1s. each. Chemical manufacturers, manufacturers of decarbonising fluids and materials, drysalters, chemists, druggists and oil merchants, manufacturers and factors of chemical and other fire extinguishers, etc. Directors: C. W. Jordan, 31, Cannon Street, Birmingham, engineer; F. J. Ballard.

A. D. GODFREY, LTD. Registered May 19. Nom. capital, £5,000 in £1 shares. Dyers, bleachers, and finishers of wool, cotton, silk, flax, hemp, jute, and all other fibrous substances, manufacturing and general chemists and druggists, etc. Directors: A. D. Godfrey, "Glenariff," Leicester Road, Wigston Magna; C. Stretton.

INDUSTRIAL SCIENTIFIC ASSOCIATION, LTD. Registered May 18. Nom. capital, £100 in £1 shares. To carry on the business of research and inquiry of all kinds, etc. Directors: R. F. Bowles, 8, Lambourn Road, Clapham, London; J. H. Williams.

Benn Brothers' Other Journals

THE CABINET MAKER.—British Industry Reviewed; Modern European Furniture; Theatre Furnishing; Woodworking Machinery Notes.

DISCOVERY.—"The Problem of the Black Sheep," by F. W. Dry, D.Sc.; "Coal Gas as an Illuminant," A New Review, by A. T. de Mouilpied, M.Sc., Ph.D., F.I.C.; "Europe—America in Two Hours?" by Max Valier; The Month's Wireless Developments.

THE ELECTRICIAN.—"Come Off Your Perch," by F. W. Leevers; Electricity in Carlisle; Electrical Progress at Bedford.

THE EXPORT WORLD.—"Exporting Christmas Cards," by Capt. Desmond Tuck; A Guide to Future Fashions; Reduced Freights to South Africa; "Secrets of Successful Selling": Advice by Sir John Ferguson; The Imperial Economic Conference.

THE FRUIT GROWER.—Map and Programme of Plantations Tour; Imperial Fruit Show Schedule Features; Apple Scab and Aphis Control.

GARDENING ILLUSTRATED.—Chelsea Show: Full Report, illustrated; "The Gardens at Burford, near Dorking," by Sir William Lawrence, Bart.; Wistarias in a Town Garden; A Novel Method of Training Sweet Peas.

THE GAS WORLD.—Meeting of the Society of British Gas Industries: Address of Viscount Ednam; Conference of the British Commercial Gas Association; Effects of the Coal Stoppage in South Wales.

THE HARDWARE TRADE JOURNAL.—Implements at the Bath and West Show; Cutlery and Plate Notes; New Cases and Cabinets; Students' Notebook; Independent Boilers in Hot Water Supply.

THE TIMBER TRADES JOURNAL.—The Future of the Welsh Pit Wood Trade; "Alongside" Question Again; Saw Fitting by Artificial Light.